

Published every Saturday by
the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, President
LUCIUS B. SHERMAN, Vice-Pres.
HENRY LEE, Vice-Pres.
SAMUEL O. DUNN, Vice-Pres.
CECIL R. MILLS, Vice-Pres.
FREDERICK H. THOMPSON, Vice-Pres.
ROY V. WRIGHT, Sec'y.
JOHN T. DEMOTT, Treas.

CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

Editorial Staff

SAMUEL O. DUNN, Editor
ROY V. WRIGHT, Managing Editor
ELMER T. HOWSON, Western Editor
H. F. LANE, Washington Editor

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNN
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
H. C. WILCOX
NEAL D. HOWARD
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
GARDNER C. HUDSON
M. H. DICK
W. J. HARGEST

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, \$6.00. Foreign countries, not including daily editions \$8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, \$1.00; foreign countries, \$2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 89

November 1, 1930

No. 18

In this Issue

Best Defense Is the Offensive Page 920

An article by F. J. Lismann with further observations on railroad problems, inspired by the extensive comment and discussion which followed the publication of his "Diagnosis of Railway Ills."

Improved Facilities Produce Savings 925

The third and final article of this series outlining economies effected by the Texas & Pacific as a result of its complete rehabilitation program.

Why Fund the Railway Pension Plan? 929

A summary of material collected by Industrial Relations Counselors, Inc., in the course of an investigation of industrial pension systems.

EDITORIALS

Sources of Support for a Railway Policy	917
Why Fund Pensions?	918
Traffic and Earnings	918
Too Little Attention to Net Revenues	919

GENERAL ARTICLES

Best Defense Is the Offensive, by F. J. Lismann	920
Southern Pacific-Cotton Belt Hearing at Dallas	924
Improved Facilities Produce Savings, Part III	925
Power Rail-Car Flange Oiling	926
Why Fund the Railroad Pension Plan? by Murray W. Latimer	929
Electrical Men Meet in Chicago	933
Cooke Micra Nut	936
Erie Commissions a New Diesel Lighter	936
Reciprocity Hearings Adjourned	937
Electric Crossing Gates for Automatic Operation	941
Freight Car Loading	942
Bridge Men Meet in Louisville	943
Arizona Train Limit Law Repeal Hearing Continued	947
Western Roads Appeal to I. C. C.	949
National Policies Menace Railway Employee Welfare	951
Hennessy Mechanical Journal Lubrication	952
Crime Has Almost Disappeared on Railroads	954

LOOKING BACKWARD 955

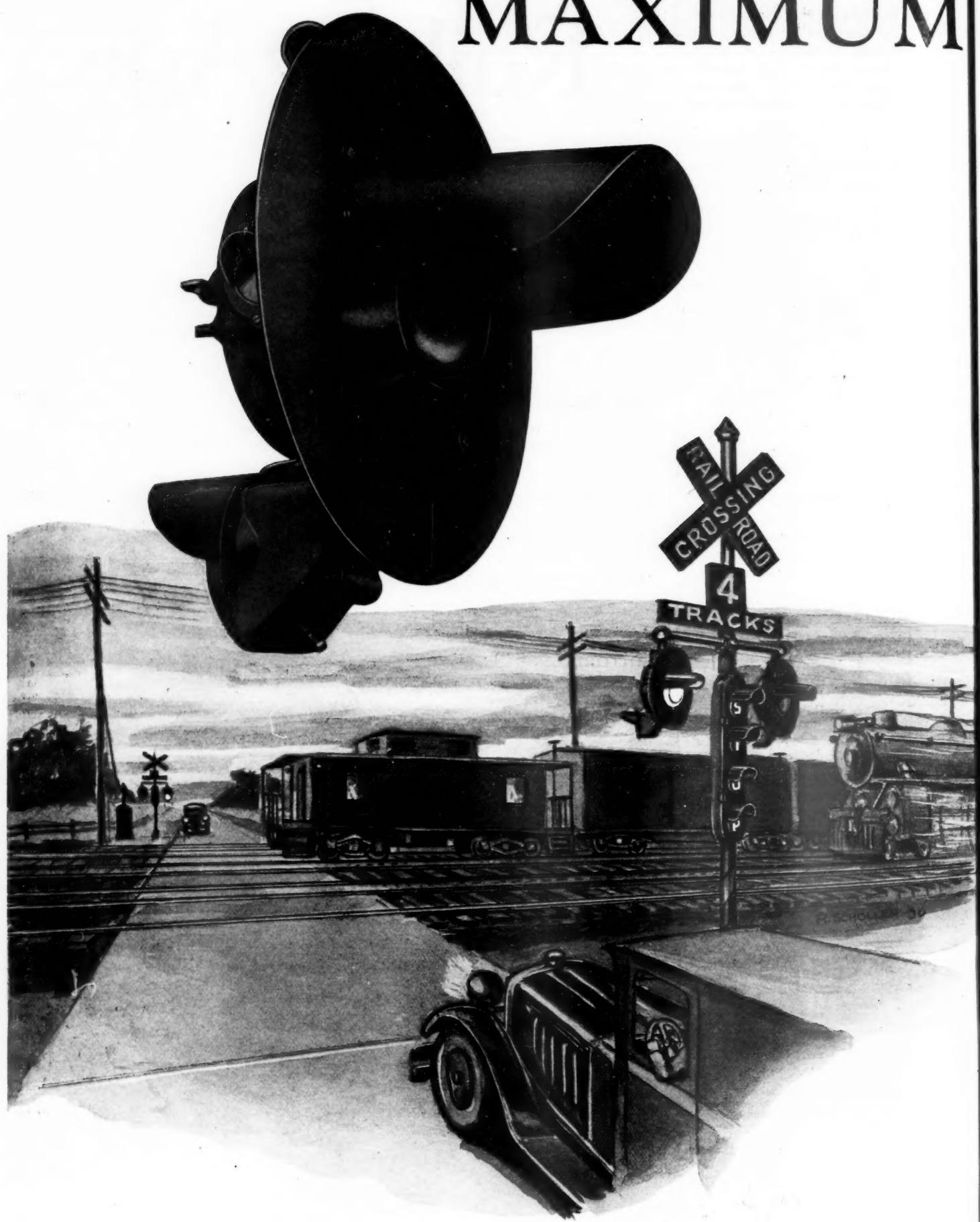
NEW BOOKS 955

ODDS AND ENDS OF RAILROADING 956

NEWS 957

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

MAXIMUM



Railway Age

Vol. 89, No. 18

November 1, 1930

Table of Contents Appears on
Page 5 of Advertising Section

Sources Of Support For A Railway Policy

THERE never was a time when the railroad industry needed a definite policy so much as it does now. There never was a time when so many persons, both inside and outside the railroad industry, realized the need for such a policy. There never was a time when so many different large and influential classes of persons would support such a policy. The realization that the railroad industry is facing a crisis is remarkably widespread. The number of persons, both inside and outside the industry, who are asking what railway executives believe should be done to meet this crisis is extraordinarily large. A most lucid and forceful presentation of the present situation and the reasons for it was made in the address recently delivered by Thomas F. Woodlock, former member of the Interstate Commerce Commission before the New York Railroad Club, and published in the *Railway Age* of October 25.

How is the continued diversion of freight and passenger traffic from the railways to be prevented? How are they to get adequate rates for handling their traffic? There is always a third problem vitally affecting net operating income—that of securing the most economical operation consistent with good service—but nobody can question that railway managements are solving that problem.

Assistance Needed

The problem of stopping excessive and destructive competition between the railways themselves is one that must be solved by their own managers. In the solution of the problems presented by government regulation and by the competition of government-aided means of transportation railway managements must have the assistance of large and influential classes of persons, both inside and outside the railroad industry. Suppose railway executives adopted and made public a definite policy setting forth the things that should be done to enable them to secure adequate net operating income and furnish good service. Upon what influential classes of persons could they rely for support of their program?

First, upon corporations and individuals throughout the country that own railroad securities.

Second, upon railway employees who, in all parts

of the country, are awakening to a realization that diversion of traffic from the railways to other means of transportation already has caused many thousands of railway men to lose their employment and is threatening the employment of many more. There are differences between railway managements and labor organizations regarding the size of the valuation upon which the railways should be allowed to earn a return, and regarding working conditions and wages. These differences need not interfere with railway employees and their organizations entering the fight against subsidization and inadequate regulation of transportation by waterways and highways; but labor leaders and employees would like to know just what railway managers believe should be done to make competition fair between the railways, the highway carriers and the water carriers.

Third, manufacturers of railway equipment and supplies, coal mine operators and their millions of employees. Carriers by waterway and highway are not only in direct competition with the railways, but are in indirect competition with the manufacturers and mine operators from whom the railways make purchases; and these manufacturers and mine operators would rally to the support of any policy the railways favored for stopping their losses of traffic.

Fourth, business men in "railroad towns," who see their business being more and more injured by the reduction of railroad employment.

Fifth, private motorists among whom, in all parts of the country, there is developing a hostile sentiment toward the increasing use of the highways by large motor coaches and trucks. In numerous states public officials and newspapers are attacking the present use of the highways by motor coaches and trucks, and demanding that they shall be subjected to stricter regulation of their service and rates, that they shall be charged more for the use of the highways, and that limitations shall be placed upon their length, width and weight.

Business Men Want Good Service

Sixth, leaders of business throughout the country, who realize how enormously valuable to business have been the improvements in railway freight service made

within recent years and who want the railways to earn enough to maintain this service. The attitude of many business men toward the railroads seems inconsistent. They say they want good service, but at the same time use the power of their traffic to depress rates and support government policies tending to divert traffic from the railways. This inconsistency of business men is, however, more seeming than real. They do not realize the extent to which their own business policies and the government policies they support, or at least acquiesce in, are tending to prevent the railways from making the earnings necessary for the maintenance of good service.

The attitude of many of them would change if they were fully informed regarding the railway situation and the reasons for it, and were asked to support a definite policy for maintaining railway traffic, earnings, credit and service.

It would not be possible to marshal all the classes mentioned in support of every part of the policy which railway executives might agree was necessary for solving the railroad problem. It seems altogether probable, however, that enough of these different classes could be marshalled in support of the different parts of that policy to bring about changes of the utmost importance in the conditions and influences now largely determining, and which threaten to continue largely to determine, railway gross and net earnings.

When, however, the facts about the railroad situation and the reasons for it are now presented, persons of all classes ask, "What do the railways want?" Nobody can answer that question. Nobody can furnish an answer to it excepting the railway executives and they have not done so. Numerous railway officers recently have made public utterances regarding the railway situation, but in the main these have been negative. They have diagnosed the disease, but have not prescribed definite remedies for it.

When railway executives unite in stating their problem and the reasons for it, in suggesting definite means for its solution and in fighting for adoption of the policies they suggest, they will, we believe, get all the support needed to make the future of the railroads look much brighter than it does now. They cannot, of course, get effective support for a policy for solving the railroad problem which has not been authoritatively formulated and made public, and which, therefore, nobody knows.

Why Fund Pensions?

FEW problems relating to the personnel of the railroads are more perplexing or complicated than those involved in the setting up and conducting of a satisfactory pension plan. Little experience was available to guide those roads which first put pension plans into operation; in the light of past experience on the

railroads and also in the industries, however, much study has been given in recent years as to how these existing plans may be remodeled better to meet the situation.

Industrial Relations Counsellors, Inc., has done a very considerable amount of investigation and study of industrial pension systems and the results of the latest of these studies will shortly appear in book form. The *Railway Age*, through a special arrangement, is fortunate in being able to present elsewhere in this issue a summary of the material collected, with special reference to the railroad field.

Traffic and Earnings

WITH ten months of the year passed railway traffic continues to show no improvement. October usually is the best month of the year, and in the first three weeks of that month carloadings were about 19½ per cent less than in October, 1929, a larger decline relatively than has been reported for any other month.

Comparisons between 1921 and 1930 are interesting because 1921 was the last previous year of depression. In the first 42 weeks of 1921 the decline of carloadings averaged 13.3 per cent, while in the corresponding part of 1930 it averaged 12.4 per cent. The true measure of railroad freight business, however, is the number of tons carried one mile. Measured by this standard, the decline in freight business in 1921 was much larger than it has yet been in 1930. There was a much larger decline in average tons per car in 1921 than there has been this year, and consequently this year's carloading statistics are somewhat deceptive. In the first seven months of 1921 the decline in ton-miles was 24.3 per cent, while in the first seven months of 1930 it was 12½ per cent. The decline in traffic in 1921, however, was almost uniform throughout the year, while throughout 1930 it has increased at an accelerating rate, and consequently when total figures for 1930 are available they probably will show that the decline in ton-miles for the entire year more closely approached the decline in 1921 than it did during the first seven months.

Earnings figures for 1921 and 1930 make a very different comparison from traffic figures. The largest general advance in freight and passenger rates in history was made late in 1920, and the average rates in effect in 1921 were, consequently, much higher than in 1920. As a result passenger earnings in the first eight months of 1921 were only 1 per cent less than in the first eight months of 1920, and freight earnings only 1½ per cent less, while both freight and passenger earnings in the first eight months of 1930 were about 12½ per cent less than in 1929. Because of a constantly increasing decline of traffic the decline of both passenger and freight earnings reported for the

year 1930 will be substantially in excess of these figures.

The railways in 1930 have had no week in which as many as one million cars have been loaded with freight. This is the first year since 1922 when this has been true. In fact, in the five consecutive years ending with 1929 average loadings exceeded one million cars a week, while in the first 42 weeks of this year they averaged only 905,169 cars a week.

day coach service, are too high to attract a larger volume of business.

In the long run, both motor coach lines and railroads will be better off if they will pay more attention to net revenues than they now do. Motor coach lines have built up a large volume of traffic in many places at rates which are not now yielding, and probably can never yield, a profit—and particularly not if taxation increases and present railway day coach rates are lowered.

The railways, on the other hand, to meet the growing competition, have placed in service more and more de luxe trains, at the prevailing rate of fare. In doing so they have succeeded in greatly increasing their expenses and in competing more fiercely with each other—but they usually have not offered any effective competition to highway transport, which is the source of their traffic loss.

Railroads could make a profit in hauling day coach passengers at rates the motor coaches could never hope to maintain if—and the *if* is important—they could secure several more passengers per train. One of the reasons why such a rate has not generally been applied is that formerly, when the railroads were the only form of transportation, many trains had to be run as a public service which would have been unjustifiable at the lower rates. This condition, however, no longer exists.

Why not, then, use the motor coach to do the business which must be done in smaller units, and make the trains, and the rates more attractive in situations where traffic can be secured in paying trainloads? The result might bring some changes in gross revenues, but whichever way such totals might move would be unimportant; the outcome would probably be more net revenue for railroads and motor coach operations as well. And a part of the resultant economy would be passed along to patrons. Thus, as always when efficiency increases, everyone would gain.

The whole difficulty in achieving such a goal is that there is not enough co-ordination between the railway and highway services. The railways are running trains in many places where motor coaches could do the job more economically; and by reason of their higher rates they have permitted the motor coach lines to enter the field of long-distance mass transportation, wherein highway transportation is fundamentally inferior to that which the railroads can provide. We believe that the railways should make a greater effort to make their passenger business profitable; that they should offer rates and service to win back the mass long-distance traffic which they are so well fitted to handle; and that they should discontinue unprofitable trains and, where advisable, substitute motor coaches for them. Along such lines, we believe, there is a healthy future ahead for both motor coach and railway service—a future which the present competitive chaos can never promise to either.

Too Little Attention to Net Revenues

PENDULUMS have a way of swinging to extremes. A year or so ago most railroads seriously interested in retaining passenger business looked upon the operation by the railways of their own motor coach lines as the only solution to the problem. Now there has grown up a considerable body of opinion which favors meeting the highway competition by a reduction in railway fares. These ideas may appear to many—certainly they do to some of their strong protagonists—as mutually antagonistic. We do not believe them to be so in the least.

There seems to be a growing opinion throughout the country that motor coaches are inadequately taxed. The *Railway Age* shares that opinion since, for taxes which bear a smaller ratio to gross revenues than the taxes paid by railways bear to their gross revenues, the motor coaches receive a highway, maintained at public expense, whereas the railroads provide and maintain their own highway.

But to believe that more adequate taxation of motor coaches will put them out of business is certainly an error. This new vehicle is one which, for certain transportation tasks, is plainly superior to the railroad: For short hauls where frequent service is required which cannot economically be provided by trains; for longer hauls for tourists to points of scenic interest better seen by highway than by rail; for passenger service on thin-traffic branch lines, and to handle local traffic along railroad main lines; to reach points not reached by railway lines, or to connect points where railway routes are unduly round-about. Adequate taxation—implying, we believe, taxes substantially higher than those motor coaches are now paying on the average—would not prohibit the motor coaches from providing the services outlined above, since for such transport work the motor coach is more economical than the railroad and must, in such service, ultimately prevail.

However, for long-distance mass transportation, the motor coach is not the logical transport agency. It has progressed far in this field, to be sure—but only because of inadequate taxation, inaccurate judgment of costs, and the fact that railway rates, for comparable

Best Defense Is the Offensive

Further observations on railroad problems, inspired by the extensive comment and discussion which arose from the "Diagnosis of Railway Ills"

By F. J. Lisman

F. J. Lisman & Co.

Part I

ADIAGNOSIS of Railway Ills," by this writer, which appeared in the *Railway Age* of August 16, obviously aroused much interest in railroad circles, as evidenced by the enormous demand for reprints and by the large amount of informative and constructive correspondence and interviews which were provoked by it. Most of the correspondence is commendatory and a very small proportion—rather less than was expected—is quite critical. Commendation, when not intended as flattery, is pleasing, while criticism is frequently helpful and, therefore, if anything, more welcome. In view of this, railroad men are invited not to suppress their thoughts or feelings but to express them, whatever they may be, and as emphatically as they may be inclined.

Most of the inquiries have been on the subject of how to merchandise freight transportation.

Selling any commodity nowadays is done by studying the purchaser's requirements and by an effort to give service to the purchaser which will enable him to buy more advantageously; in other words, to save money.

Railroad Rate May Be But a Small Part of Transportation Cost

The cost of transportation between the consignor and consignee, in nearly everything but the very heavy commodities, is made up of many items. If both parties are not located on railroad track, the cost consists of—

- a. Transportation to and from the railroad;
- b. Packing;
- c. Actual freight charges which include
- d. Freight on tare.

Frequently the actual railroad transportation is not more than 10 per cent of the cost of the total shipping expense, the balance being made up of the items mentioned under a, b and d.

Sometimes the shipper pays as much as double first class on the weight of cases which may aggregate 25 per cent of the weight of the contents. Cost of hauling to and from freight stations may be reduced in many ways: By the use of freight containers, better arrangement of freight platforms, closer cooperation with the trucker and by store-door delivery.

Very few people realize that approximately 8 per cent of the lumber cut of the United States is used for cases of all kinds—a large item, surely capable of great reduction.

Many shippers could use dif-

ferent types of containers or corrugated boxes to great advantage. Unless the railroads help to adopt the freight container for the benefit of the shippers, the trucks will do so and take additional traffic from the railroads. In the course of a few years, the freight container will be used for many purposes not now visualized even by the shippers themselves and will help to create traffic which does not now exist, such as the shipping of fruit and vegetables direct to communities too small to consume a full carload.

Attributes of a Successful Solicitor

The real transportation solicitor must have enough mental inquisitiveness and acquisitiveness to want to know what are the needs of each trade or shipper and study these needs sufficiently so he can really know the problems and give constructive advice about them.

There is many a commodity which moves an unnecessarily long distance because possible producers or purchasers may not know of each other, although they may be located on the same railroad system. Some companies have been very progressive along that line to assure themselves of a larger division of the rate, or more net revenue. Others have been quite negligent.

Many shippers—particularly those shipping articles of food—have particular wants as to time of day or even the day of the week on which they want their goods shipped and delivered. Many consignees can be persuaded to instruct the shippers to load the cars consigned to them more heavily; that is, for example, to concentrate the goods into four cars instead of five. Occasionally the shipper gets the idea that his customer wants his goods shipped in minimum carload lots when that is not the case at all. As a matter of fact, given a certain tonnage, it is really more economical for the shipper and receiver to have the goods concentrated into as few carloads as possible.

Operating departments have been making every effort to increase carloadings, while the average order-taking solicitor somehow seems to think that the more carloads he gets the more valuable he is to the company which employs him.

The difference between the various commodities is so great that the only rule which can be given on that subject is "study and analyze the shipper's wants and try to save him money." If any transportation salesman can do that, he can get and hold

Mr. Lisman Says—

The real transportation solicitor must have enough mental inquisitiveness and acquisitiveness to want to know what are the needs of each shipper and study these needs sufficiently so he can really know the problems and give constructive advice.

Too many railway men do not read their trade paper and, therefore, are not thoroughly informed.

Store door delivery is coming as certain as day follows night!

the good will of his clients—the patrons of his railroad.

Classes in geography would not be at all superfluous in many cases. It is doubtful whether the old-line cigar-distributing freight agent would be willing to attend a class or take a course in a correspondence school in geography or the needs of the manufacturer of candy or furniture; nevertheless, just about that is what is needed. (Times have changed so much that cigars are not even popular with the younger generation).

The correspondence received also showed that too many railway men do not read their trade paper and, therefore, are not thoroughly informed in their own line. Not to keep up to date with what is doing in one's own line of endeavor, is a serious reflection on anybody, anywhere.

Railroads now employ a good many freight solicitors at comparatively low salaries—quite possibly half the number at double the salary might be more effective.

A few letters have been received from traffic men who rather resented the idea that college men should take their places. The very tone of their letters indicated that they had not the faintest idea of what was really required or, to use the slang expression, "what time of day it was."

There were many letters and conversations on the great problem of the day—highway competition. The inroads of the motor truck on railroad-traffic seem more serious even than previously indicated. This is further proven by an interesting article in the Motor Transport Section of the *Railway Age* of September 27, by L. B. Young of the Pacific Electric Co.

A western railroad officer writes: "This year, for example, many carloads of fruit were trucked from Colorado to Texas points and Kansas City. Trucks are now being built which will carry better than a standard carload of some commodities, such as radios, for example. These trucks are over 60 feet long and, of course, are a menace to other traffic on the highway. Some of the state commissions are becoming alive to this situation, and associations of private automobile owners are making vigorous protest."

According to the Automobile Chamber of Commerce there are now nearly 3,400,000 trucks in use, or about 900,000 more trucks than railway cars.

Rail and Highway Competition Uneconomic

In the final analysis the railroads should and will carry that which they can handle most economically and the trucks will do likewise. If the two methods are co-ordinated to the utmost limit, this will result in the least expense to both the public and the carrier companies.

Irrespective of terminal charges a railroad can carry an average of 50 tons in a car at an operating cost of 25 cents per car mile, or one-half cent per ton-mile. The cost per car-mile depends upon a good many conditions such as grades, curves, physical condition of the property, distance between terminals, amount of empty car mileage, etc. The gross receipts per ton-mile on all railroads, excluding l.c.l. business, are today a shade less than nine mills which, on the average lading of about 27 tons is about 25 cents per car mile.

There are comparatively few trucks which carry more than 10 tons because there are too many bridges which will not carry heavier loads than that. The average capacity of the trucks today is probably under four tons but inasmuch as the average load per truck is increasing, we might deal with an average capacity of seven tons.

One train crew of five men can handle any number of cars but it takes one man per truck although, in England, it is quite common to have one tractor haul three or four trailers. This may, to some extent, become American practice if the public which uses the highways will permit it.

Railroads Should Use Trucks

Where They Can Produce Savings

Counting the cost of fuel, the heavy cost of depreciation on trucks, wages, wear and tear on tires, etc., it is doubtful whether cost of a truck-mile, with an average carrying capacity of seven tons and an average load of probably under five tons, will ever be as low as a car-mile on the railroad with an average carrying capacity of 50 tons and an average load of 27 tons. In other words, under the most favorable conditions a truck ton-mile costs four times as much as a railroad ton-mile, including terminal expenses. Individual cases differ

very much from general averages, but the fact remains that the truck is more economical for goods which require an extraordinary amount of casting, such as radios, typewriters, etc., and for broken lots and for a short haul. The railroads which, wherever possible, should abandon their local freight trains, are in a better position to assure full loads to trucks than individual or local truck companies. Railroads can feed the trucks with the freight which comes over their lines from far away points and also with the traffic originating locally.

In Great Britain where store-door delivery is the practice the railroads own and operate horse and motor trucks in large quantities for local delivery and there is no reason why the same thing cannot be done in the United States. The problem, however, is complicated by the fact that many merchandising firms operate their own trucks as do many individual truckmen who know nothing about depreciation or cost of operation. They operate trucks for themselves or on a contract basis and would not and could not be bound by any I.C.C. rules and regulations. Much of the loss of business of the railroads to the trucks is due to store-door delivery by the trucks. The railroads have been fighting shy of this but store-door delivery is coming as certain as day follows night! The longer the railroads defer it the more business they will lose and the more it will cost them to regain the business which they are losing. The problem is complex but no more so than the problem of the old-fashioned grain farmer against the modern farmer who sows and gathers his crop by machinery. Some of the railroad men seem to be in the position of the former coachman who did not want to learn how to drive an automobile or of the harness maker who found trade disappearing.

It is much more economical to load a truck direct from a railway car than to unload a car onto the floor of a freight house and then lift the freight back into a

Trucks, Trolleys, Taxation—

Many a trucking company operates both in local and long haul service. Inasmuch as it gets the trucking anyway, it has certain advantages in persuading the shipper to give it—rather than the railroad—the line haul.

Why should steam railroad cars weight twice as much as trolley cars?

Railroads pay 5½ times as much for taxes and right of way as do highway operators.

truck. Shippers in the City of New York have had a taste of the economy and convenience of store-door delivery, through the system of "constructive" freight stations, which may more correctly be called "imaginary" freight stations—since declared illegal by the I.C.C. They are now clamoring for it and are willing to pay a fair price for that service. Nothing prevents the accomplishment of this service except jealousies among the carriers.

A thorough analysis of the reasons for the growth of truck traffic would show convenience and accuracy in loading to be possibly a larger factor than difference in rates. Many a trucking company operates trucks both in local and long haul service. Inasmuch as it gets the trucking anyway and is in constant personal contact with the shipper, it has certain advantages in persuading this shipper to give it the long haul.

To unload freight from a truck operated by a railroad, into a local freight station instead of direct to the nearby merchant's door, is equivalent to forcing him unnecessarily to spend money—and nobody loves to do that.

Passenger Traffic Problem Relatively Simple

The competition for passenger service is a good deal more simple. A bus mile costs from 25 cents to 50 cents, depending on the size of the vehicle. These vehicles carry from 20 to 40 passengers. A passenger car-mile, in a five-car train, costs just about 25 cents, but a passenger car will seat from 60 people upwards. In mass transportation, therefore, the railroad can produce transportation more cheaply than the bus; hence the problem is one of getting mass consumers of transportation service. There is such mass travel between large centers such as between Cleveland-Detroit, Detroit-Chicago, Chicago-St. Louis, St. Louis-Kansas City, Los Angeles-San Francisco, etc. Low rates with quick service can probably get the bulk of this business.

The Cincinnati & Lake Erie Railway, an electric line in Ohio, has during the last five years, by a careful study and adjustment of its rate structure and schedules, managed to increase its gross earnings about 20 per cent and its net earnings much more. This is in a territory where the steam lines have been losing traffic rapidly!

The remarkable growth of the Chicago North Shore & Milwaukee is undoubtedly largely due to its extraordinarily favorable territory but only after it received a very large share of the Chicago-Milwaukee business did the steam railroads substantially reduce their running time. Progressive Insull management is apparently now successful in building up a large passenger traffic in the relatively thin territory of another trolley line—the Chicago, South Shore & South Bend R. R.

One wonders whether it is really necessary that steam railroad cars traveling generally over a better roadbed should as a rule weight fully twice as much per seat as trolley cars! Have steam passenger car designers been inhibited from showing originality or anything deviating seriously from "set ways"?

We have mass travel in the east between large cities such as between New York-Philadelphia, Philadelphia-Baltimore, New York-Boston, but on the shorter hauls,

such as New York-Philadelphia, the bus cannot and never will be able to compete in time or service on account of the delays in getting from the circumference to the center of the larger cities. On the other hand, the railroads which can and do make excellent time between these centers are handicapped by the enormous cost of their terminals. Their train-mile earnings are very high but with the expense of handling cars in and out of expensive terminals, the apparently huge profits shrivel considerably.

Urban Terminal Costs Are High

The Pennsylvania Railroad has just spent over 50 million dollars on its passenger terminal in Philadelphia. Figuring interest at 4½ per cent and taxes at 2½ per cent, this makes a charge, irrespective of operation, of about \$10,000 a day for this one terminal alone. The total expense of the Pennsylvania's entrance into New York City was about \$120,000,000. Figuring interest and taxes on the same basis, makes about \$8,400,000 or \$23,000 a day. The average number of cars of the four roads using the Pennsylvania station daily, that is P.R.R., Long Island, Lehigh Valley and New Haven, is 5,400, making an average charge for interest and taxes of \$4.25 per car to which should be added the cost of \$3 per car for operating expenses. A railroad car has to run quite a way before it will cover this \$7.25 for terminal expenses at one end.

The Chicago Union Passenger station cost about 60 millions—the new Cleveland Terminal somewhat more. Obviously it takes a lot of passengers every day to pay interest and depreciation on this, plus the upkeep and operation. With all the most modern and scientific devices, the cost per car in and out of these new stations is somehow always greater than previously.

We now hear much about trains—especially when operated electrically—running at the rate of 80 or 100 miles per hour. This is, no doubt, easy enough; the real problem, like with airplanes, is how to stop fast enough and without accident when something goes wrong.

Should Highway Operator's Taxes

Be 5½ Times Present Rate?

Owners of buses and trucks have much to say about the taxation of highway carriers. They are complaining bitterly about the high tax on gasoline, etc. It is estimated that they pay about 5 per cent of their gross earnings in taxes which gives them a free right of way. The railroads pay out about 7 per cent of their gross earnings in taxes and have to spend about 14 per cent of their gross earnings for maintaining their right of way, irrespective of paying interest on the cost of it. To put it differently, the railroads pay out in taxes, maintenance and interest on right of way, about 27½ per cent or about 5½ times as much as the lines using the highways which were constructed—especially in rural communities—largely with taxes still being collected from the railroads. There is still many a county west of the Missouri river where the railroads pay one-half or more of all the taxes.

It is interesting to note that the railways developed

Meddling, Pooling, Buses—

An outrage that railways have to depress rates 20 per cent and short-haul themselves on traffic delivered to a government-owned competitor.

Freight car pooling growing in favor.

It is governmental meddling, not regulation, which destroys initiative.

Discovers no useful purpose served by long distance bus lines; could not exist if railways established proper rates. Railroads can make money in passenger service at rates much lower than buses can afford to charge.

the country and built up the towns, particularly west of the Alleghenies, and that most of the good highways directly parallel the railways for the purpose of accommodating competing bus and truck, as well as pleasure, traffic. Few paved roads run at right angles to local railroad stations for the purpose of serving the outlying communities and developing additional taxable values and traffic.

In thickly settled communities people want to have an opportunity to travel frequently to the nearest larger town or city and there, bus service every one or two hours is desirable. People in small towns, in most cases, would prefer to take a bus to a medium sized town where they can get frequent service of through trains, rather than have to travel on a local train which probably would make no close connection with a fast train at the nearest large city.

Buses Have an Important Place in Transportation Scheme

The railroads have been slow in substituting motor cars which can be operated at 25 cents to 50 cents per train-mile, for local trains, but it is doubtful whether these motor cars are as welcome to the public as buses which stop in the middle of the town. The railroads should and, in time, will, co-ordinate bus and rail service on the basis of greatest economy to the public and at rates which will bring the maximum net revenue all around. But the sooner, the better.

There is a public necessity for:

1. Frequent local bus service in thickly settled districts to accommodate people who wish to visit the nearby larger centers of population or to connect at such points with fast trains for cities further away.
2. Occasional bus service—that is, twice to four times a day—in thinly settled districts where branch line railroad service or the stopping of main line through trains is not warranted by the volume of traffic.
3. Bus service, commensurate with the average demand, to connect rural communities with nearby larger towns.
4. Sightseeing buses for interesting and beautiful sections of the country. The Santa Fe has been a pioneer in this direction through the Indian country of New Mexico. There are many opportunities elsewhere.

There would appear to be no public convenience or necessity for long distance bus lines which could not exist if the railways endeavored by proper rates to hold and further develop long distance travel. Railroads, as previously pointed out, can make money in carrying, for a long distance, large numbers of people at rates which would bankrupt bus lines.

Why Bar the Largest Taxpayer from Waterways Built at Public Expense?

It might be of great advantage to some sections of the country if the railroads were again permitted to own ships. Obviously, it was a great mistake to compel a number of carriers to sell ships which operated on the Great Lakes. The traffic handled by these ships has been mostly lost to the waterways. Similarly, the railroads should not be the only ones to be deprived of the right to use the waterways provided by the government if the railroads should find them to be more economical. The government has authorized its fully owned federal barge line to make rates 20 per cent below the railroad rates, but it is certainly an outrage that the railroads are compelled to shrink their own rates 20 per cent on business delivered to the federal barge line when, at the same time, they are compelled to short haul themselves.

While of late years it has been noticeable that a number of large shippers have located their plants alongside of the waterways, it is not at all certain that the waterways will ever be very heavy carriers. Waterways have

been and presumably will continue to be heavy tax eaters and at the same time will tend to shrink or circumscribe railroad rates. It is very curious, anomalous and contradictory that Congress should authorize a rate structure which is presumed to pay a fair return on the money invested in railroads and on the other hand should appropriate money mostly for the purpose of forcing down these presumably fair rates which, during the last ten years, have never approached the "fair return" which they are presumed to provide.

Apropos of waterways competition, it is interesting to note that the American Warehousemen's Association has brought a complaint before the I. C. C. against the federal barge line (fully owned by the United States government) on account of its free storage practices. It appears it gave as much as 6 months' free storage on sugar in order to control its transportation; also that the barge line, in many cases, absorbs the switching charges of the connecting railroads. The warehousemen complain that, in effect, the government competes with them by storing goods gratis in tax exempt warehouses built by the taxpayers' money.

It is interesting to note that the up-river movement of the barge line has dropped off considerably due to the fact that the railroads can handle to the greater satisfaction of the former principal shipper, the Aluminum Company, the bauxite from the steamers at New Orleans to the manufacturing plants near St. Louis. However, perhaps even the barge line officers are realizing the truth in the saying of the old steamship captain that "the best freight to haul against the current is no freight at all."

Should Freight Cars Be Pooled?

Correspondence seems to indicate that the minds of many railroad men are again tending toward economy which may be brought about by the pooling of freight equipment. One correspondent who is evidently quite familiar with this subject writes most interestingly on several phases of equipment, as follows:

... Cars of the same initial and class pass each other in substantial numbers enroute to the junction point via which each individual car has its own record rights. Some may say this number is not great, but I am satisfied that if the entire cost, including road haul, terminal switchings and value of idle equipment involved were assembled, it would reveal an astonishing exhibit.

... If a car service officer of any stated road can keep his car balance on the proper side of the ledger he is regarded as doing good work; hence there is a constant "football performance" in the manoeuvering of empty equipment between connecting lines in which I fear at times the cost of road performance and terminal shifting is not considered and which in effect, is a solid loss. In addition each road has a very large force engaged in actual per diem accounting.

This correspondent further writes:

Associated with the problem of pooling is another point of interest which probably escaped general discussion,—the matter of simplifying car markings, in that there is now a variety of upward of 500 railroad reporting marks and a variety of over 1700 in cars of private ownership. Added to this variety are the individual units of 2½ millions of railroad-owned freight cars; and, as it is but human to err, it is not difficult for even the inexperienced to appreciate what a volume of errors is thrown upon the car accounting departments of all roads of the country each day in the effort to maintain an individual account for each car.

Conductors are not always retained for their clerical ability but rather for the proper handling of their trains; and even though every conductor and agent at junction points made but one error per hundred cars handled, all of which must be straightened out and the record perfected, some idea can be had of the great volume of over and short records which must be dealt with daily and the consequent clerical expense. If we can hold down the errors to about two percent, we feel that we are doing well.

The merits of car pooling seems to be proven by the

success of the Pullman Company and the refrigerator and tank car lines which, in effect, are but car pools.

Government Meddling, Not Regulation, the Problem

A prominent railroad officer and welcome critic writes: "I am sorry you did not mention the real trouble with the railroads—*meddling* (not regulation) by government, with the effect of destroying initiative." He further writes on the subject of rate manipulation:

Just as the prohibition law has caused many otherwise law abiding men to resort to degrading practices, so the inhibitions during recent years upon railroad development of the kinds of wholesome commercial initiative which are practised in every other American industry have caused some railroad traffic officers to resort to unsound competitive practices which are not at the moment specifically prohibited.

My point is further illustrated by your observation that American railroad men have shown operating efficiency while the traffic officers have become wasters. The traffic officers are the same kind of men as the operating officers, and quite as capable of efficiency; the difference in their results is due to the fact that the operating officers have not felt the same pinch of restraining interference by government, they can still "swing a cat".

It seems to me to be as dangerous to condemn a whole industry as it is to condemn a whole people. Those who charge that the same traffic officers who have historically played so large a part in the development of the present industrial and commercial primacy of the United States are today Merovingians, should, I maintain, look for the cause and consider how much they have themselves contributed to that decadence.

Regulatory Bodies Should Adopt Attitude of Commerce Department

You sapiently remark that "regulation has come to stay." I do not suppose there is a responsible railroad manager left who would seek to abolish "regulation" any more than the national bankers do, but there is a great difference between "regulation" and meddling with details.

A wholesome contrast to the plight of the railroads in relation to government is the part the Department of Commerce takes today in promoting markets for American manufacturers.

[The second and concluding part of this article will appear in next week's *Railway Age*. In it Mr. Lisman considers, among other things, the manufacture of railway supplies by the railways themselves, what Wall Street can and should do to aid the railroads, the alarming decline in railway credit and questionable devices used to hold or develop traffic. The future of the coal trade is thoroughly discussed (and a viewpoint rather more hopeful than one often reads nowadays is disclosed). The article ends with eight questions which constitute both a program for and a challenge to the railroad industry. Mr. Lisman, as we believe those who have read this article thus far will agree, has again with his penetrating observation and outspoken frankness gone down constructively into the very fundamentals of the present serious railway problem. Both Mr. Lisman and the *Railway Age* will welcome comments and criticisms. The subject merits the fullest discussion—con as well as pro.—EDITOR.]

MEDICAL EXAMINERS of the Pennsylvania will give a series of health talks throughout the winter for employees of the railroad and their families. The talks will be given without charge to promote a wider knowledge of the proper care of the human body.

THE CANADIAN NATIONAL is painting all self-propelled cars with red and yellow colors as a further step in the company's campaign to reduce grade crossing accidents, realizing that the human eye can detect red and yellow at greater distances than other colors.

Southern Pacific-Cotton Belt Hearing at Dallas

AFFILIATION of the St. Louis Southwestern with the Southern Pacific is necessary if the former road is to be preserved as an efficient transportation machine, Daniel Upthegrove, president of the Cotton Belt, told Thomas F. Sullivan, examiner for the Interstate Commerce Commission, at a hearing on the consolidation of the two roads at Dallas, Tex. The hearing, which had been in progress since October 20, adjourned on October 25 to a time and place to be fixed by the commission. The final days of the hearing were marked by considerable testimony in opposition to the application of the Southern Pacific to acquire the Cotton Belt. Just before adjournment Examiner Sullivan announced that the adjourned hearing will be confined to the taking of testimony of witnesses of the Texas & Pacific, the Missouri Pacific and the St. Louis-San Francisco, interveners who have taken an active part in opposition to the granting of the application by the commission. The Missouri-Kansas-Texas entered a conditional protest to the merger of the two railroads just before the close of the hearing.

Mr. Upthegrove said that the controlling considerations actuating the desire of the Cotton Belt to be acquired by the Southern Pacific were the necessity of preserving the present traffic relationship between the two railroads, and the necessity for affiliation with a strong and larger system. Since 1923, maintenance of that relationship has been the major policy of the Cotton Belt, and the traffic interchange has grown to such a position of importance for the Southern Pacific that it now requires measures to eliminate any possibility of its disruption by acquisition of the Cotton Belt by adverse interests, he said.

The proposed Southern Pacific-Cotton Belt affiliation is one which has been gradually brought about through a growth in mutual interdependence between the two systems and the territories served by them, he said, adding that the Cotton Belt is admirably located for "bridge" traffic, but not well situated for local traffic. Mr. Upthegrove stated that if conditions which were prevalent prior to the World War, when the carriers serving Central and Southern Texas and Louisiana were confined solely to those states and were free to interchange business with the Cotton Belt, still existed, there would be no need for that road to seek affiliation with any other road. He declared that there is no other trunk line in that section which is not a Cotton Belt competitor for business moving through the upper Mississippi river gateways.

There are two carriers in the Southwest which can feed the Cotton Belt traffic, Mr. Upthegrove said, which in in the order of the importance of their feeder value are the Southern Pacific and the Chicago, Rock Island & Pacific. He pictured the proposed affiliation of the Frisco with the Rock Island as meaning the eventual diversion of the bulk of the Cotton Belt interchange with the Rock Island to the Frisco. He pointed out that the traffic which the Cotton Belt could deliver to the Illinois Central at Shreveport, La., would largely be the same traffic which the Southern Pacific delivers to the Cotton Belt. The only substantial traffic that the Illinois Central could deliver to the Cotton Belt would be that from eastern points to Texas, on which the Illinois Central would deprive itself of its long haul to Shreveport, if the Cotton Belt were made a part of that system, Mr. Upthegrove said. Unless the Southern Pacific relationships were maintained he felt that the Cotton Belt would be

(Continued on page 932)



The T. & P. Main Line in the Brazos Valley

Improved Facilities Produce Savings

*Texas & Pacific's complete rehabilitation results
in operating efficiency*

Part III

ACH step in the rehabilitation of the Texas & Pacific, described in Parts I and II of this article, taken in conjunction with the improved operating methods made possible by the new facilities, has been followed by a distinct improvement in operating results. The better track, signals and motive power have resulted in the scheduling of much faster and heavier freight trains, while the improved terminal facilities have insured against delays at terminals.

Cars per train averaged 37.1 in 1923, when the program was begun, and 47.1 in 1929; gross tons per train averaged 1,325 in 1923, and 1,751 in 1929. The average speed increased from 11.1 miles per hour in 1923 and 13.7 in 1929, and this, taken in conjunction with an increase in net tons per train from 536 to 652, produced an increase in net ton miles per train hour from 5,980 in 1923, to 8,898 in 1929. During the same period, the average gross ton miles per train hour were increased from 14,809 to 23,772. The details of these results are shown in Table 1.

The improvement in the efficiency of the manpower employed, brought about by the improved methods, is equally enlightening. For each man-hour employed in 1929, 378.9 gross ton miles were produced, compared with 322.8 in 1927, an increase of 17.4 per cent. Compared with 1920, when 163.5 gross ton miles were handled per man-hour, the increase was 131.7 per cent.

Reducing the improvements to the basis of a certain specific traffic also shows interesting results. A considerable portion of the revenue is derived from the haul on perishables from the Pacific Coast, via El Paso to Texarkana and other eastern junctions. In 1925, the miles per car per day, loaded and empty, on refrigerator cars, were 141.2. By 1928, this was increased to 173.4 miles per day, and, for the year 1929, the 181.7 miles per car per day.

New Divisional Line-Up

The new facilities brought about changed operating methods. This change was gradual, and kept pace with



The Hump at Lancaster Yard

the completed work. One of the important changes was the consolidation of supervision under three division superintendents instead of four previously employed. This change took place on June 16, 1929, and the former and present line-ups of the divisions are as follows:

Division	Former Mileage	Present Mileage
Louisiana	766	730
Fort Worth	396	610
Denton	315	..
Rio Grande	476	613

It will be observed that the present line-up provides for a far more equitable distribution of mileage than was formerly the case. Moreover, it is a more natural division of responsibility, the limits of the divisions coinciding closely with the natural topographical divisions of the country traversed. It places under one superintendent all of the territory where similar operating conditions prevail. Each of the three divisions differs widely in physical characteristics and natural resources. The Rio Grande division traverses the high, dry table-land of West Texas, the Fort Worth division the fertile agricultural and industrial sections of Central and East Texas, and the Louisiana division the semi-tropical, swampy lands of the Red and Mississippi river valleys. The contrast between the three divisions from practically every viewpoint is extreme, yet, under the present line-up, each superintendent has a division that presents similar problems throughout its entire length.

Each superintendent has on his staff a sufficient number of trainmasters and assistant trainmasters to assist in handling the operating details and in addition,

dry beds into raging torrents in a few hours, and, in not infrequent cases, in a few minutes. These torrents play havoc with the embankments if uncontrolled, and, to eliminate the danger of wash-outs, wing-dikes are constructed in all places where water trouble has been experienced, or is likely to be experienced. There are relatively few railroads in West Texas, and practically no possibilities for detours, and the expenditure for flood protection is amply justified by eliminating the probable periodical severing of the main line.

The Louisiana division follows the Red river for a considerable distance, and this stream requires constant watchfulness, since its rate of rise and fall is rapid, and it is prone to change its course. In addition to the normal protection, it was necessary for the T. & P. engineers to change the course of the river in one or two places where it threatened to undermine the tracks. At another point, where the same situation existed, and the course of the river could not be changed, a new main line of approximately two miles was built and will be placed in service in the near future as the river has almost reached the present line.

Oil Operations

About 10 or 12 years ago, when the oil fields in the vicinity of Ranger, Texas, were at the height of production, and the resulting traffic was at its peak, the Texas & Pacific encountered considerable difficulty in meeting the situation. The present boom oil field, which brought on a similar rush of traffic, and has continued unabated since December, 1927, shows an interesting difference, in that no sidings have been blocked

Table 1. T. & P. Freight Train Operation
(Excluding mixed and special trains)

	1929	1928	1927	1926	1925	1924	1923
Cars per train	47.1	46.9	47.0	45.4	40.9	38.0	37.1
Gross tons per train	1,740.5	1,751.5	1,697.8	1,625.0	1,455.7	1,359.4	1,325.5
Net tons per train	651.5	678.5	623.9	602.3	556.7	540.9	536.6
Average miles per hour	13.7	12.7	13.3	13.4	12.6	12.3	11.1
Average gross ton-miles per train-hour	23,771.9	22,250.9	22,557.6	21,680.7	18,304.9	16,660.9	14,809.3
Average net ton-miles per train-hour	8,897.9	8,619.3	8,288.9	8,041.3	7,000.7	6,628.8	5,980.5

an officer bearing the title of master of transportation, who looks after transportation details. Thus, the superintendent is free to devote more time to the larger necessities of his job, and still supervise closely the operating and transportation details.

A Study in Contrasts

The contrasting problems encountered are well illustrated in the operation of water cars. On the Rio Grande division, where the grades are heavy, water cars are not hauled as a rule, except on locals where tonnage is not a factor, where water cars are provided, because of the scarcity of water in that section. On the Louisiana division, water cars are hauled regularly although there is plenty of water available, because with the low-grade line, the elimination of train stops is of much more importance than the additional tonnage involved.

It is an interesting fact that, although the Louisiana division operates through a section having one of the greatest average annual precipitations in the country, and the Rio Grande division through a section with one of the lowest, flood protection is necessary on both divisions. In the West, on the rare occasions when it does rain, the baked land absorbs little of the water, which runs off into washes and coulees, changing their

and it has not been necessary to issue any embargoes.

The present field extends between Pyote, Tex., and Monahans, about 375 miles west of Fort Worth. The extent of the traffic to and from this section is indicated by the fact that both at Pyote, where freight revenues averaged \$3,000 a month in 1927, and at Wickett, a new station, the revenues averaged about a million dollars each per month during 1928.

Practically all of the oil-field business comes in from the east or is destined to eastern points. The nearest terminal to the east is at Big Spring, Texas, about 90 miles from the field, and turn-around runs are operated from this terminal to an assembly yard that has been established in the field. This yard consists of three tracks, with lap sidings and a wye, having a total capacity of 200 cars. "Dodger" crews render 24-hr. service in the field, distributing empties and spotting and pulling loads. From Wickett, these crews handle trains of 90 cars, with a caboose following the 45th car. At Monahans, the trains are divided in two, because of adverse grades beyond. To facilitate operations, passing tracks between Pecos and Big Spring, 134 miles, which were formerly spaced 10 miles apart, are now 5 miles apart.

For about 20 miles east from the field, adverse grades are encountered, but, from Douro to Big

Spring, 70 miles, the railroad is on a descending grade. To take advantage of this, trains are hauled to Douro in 50 car lots, and consolidated, so that 150-car trains are operated on the down grade. A similar operation is maintained westbound into the field, when necessary. Passenger train service affords little interference, and the 150-car trains are kept on the main-line throughout their run, to avoid the necessity of sawing by at passing tracks. From Big Spring, the trains of oil are sent eastward with 50 cars of oil on each, to comply with the 50-car blocks used in the oil industry, and the trains are brought to tonnage by miscellaneous loads added at Big Spring.

The immediate supervision of the 40-mile loading and receiving territory is in the hands of a day and a night general yardmaster. Hard roads parallel the line, and these men are provided with automobiles so that they are able to cover the entire territory several times a day, if necessary. The supervisory force is supplemented by yardmasters at the local points.

A new oil field, which promises to equal the other fields in the amount of traffic handled, is under way at Grand Saline, Tex., 68 miles east of Dallas, on the busiest section of the main line. Because of the change in the former Denton branch to a secondary main line, it is possible to divert many of the through

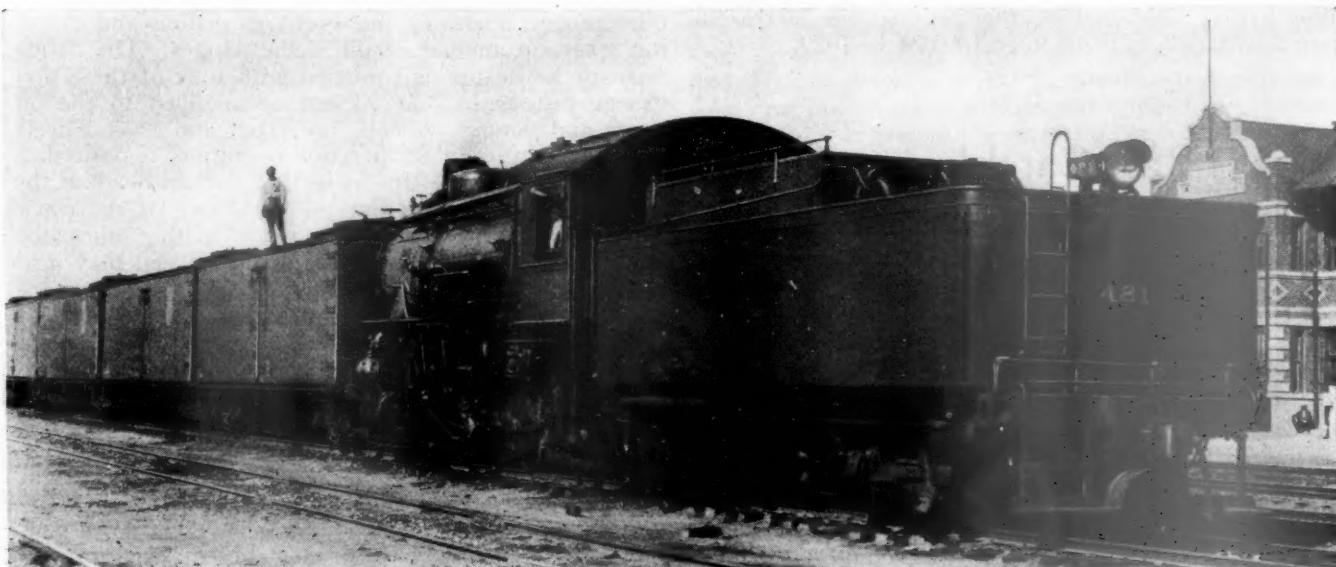
Worth, for solid set-out cars. Where this is not possible, one set-out car serves two or three stations, the overflow being handled by morning locals.

A similar train is operated nightly from New Orleans to Alexandria, which sets out cars for main line cities and for distribution on the Louisiana branches as well. The cars for destinations on the branches are handled by night locals, after being set out by the merchandise trains at the junction points. In this manner, overnight service from New Orleans is provided to the main line stations and branch line stations as well. By this means, much of the traffic formerly moving by other agencies of transportation, has been won back to the railroad, and the fast night merchandise trains have proven themselves to be real money-makers.

All of the Louisiana branches, with the exception of the Ferriday branch, have mixed train service. A local passenger train is operated between Ferriday and New Orleans, where a double purpose is served, since this train handles much of the main line local express and mail traffic between Addis and New Orleans, after serving the branch from Ferriday to Addis.

Results of Improvements in Power

More efficient operating methods, and a material



One of the New Switching Locomotives in Service at Baird, Texas

trains over the Denton line, thus avoiding congestion and delays to through freight, in the vicinity of Grand Saline.

Merchandise Trains

In common with most other roads, the T. & P. has been experiencing keen competition from motor truck lines. In order to meet this situation, night merchandise trains are operated on fast schedules from the jobbing centers. One of these trains is operated nightly from Dallas and Fort Worth, leaving those points shortly after the freight houses close, and arriving at Big Spring, 268 miles west, 15 hours later. This train is made up of cars of merchandise, which are set out all along the line, to be ready for early morning delivery, the last cars being spotted at Big Spring not later than 10:30 a. m. Practically all of the intermediate towns serve as distributing points for a wide adjacent territory. It is possible, therefore, in many cases, to accumulate tonnage in Dallas and Fort

decrease in fuel cost, have been made possible by the improvements in motive power. A system of long engine runs was installed that takes into consideration the increased capacity of the locomotives, as well as the revised terminal situation. The longest passenger run prior to 1925 was 348 miles, between El Paso and Big Spring, as compared with the present run of 615 miles, between El Paso and Fort Worth. The longest freight run was 207 miles, between Gouldsboro, La., and Boyce, as compared with the present run of 315 miles between Gouldsboro and Shreveport. Wherever it could be done efficiently, the main line runs have been extended, with resulting economies, as shown in Table 2.

By the use of modern power and by intelligent supervision, fuel costs have been materially reduced. During 1929, an average of 121.4 lb. of coal (or the equivalent in oil) was consumed per 1,000 gross ton-miles, freight and passenger, as compared with 132.1 lb. in 1927, a saving of 61,318 tons of coal. Com-

pared with 1917, when 257.2 lb. were consumed, the saving represented 778,229 tons of coal.

During 1929 an average of 110 lb. of coal in freight service and 175 lb. in passenger service were consumed per 1,000 gross ton-miles. This represents an improvement over 1928, and a still more marked im-

Table 2. Change in Engine Runs

Present	Freight Service	Former
Gouldsboro-Shreveport ...	315 mi.	Gouldsboro-Boyce 207 mi. Boyce-Marshall 142
Shreveport-Fort Worth ...	223	Marshall-Fort Worth 182
Fort Worth-Big Spring ..	267	Fort Worth-Baird 140
Big Spring-El Paso	347	Baird-Big Spring 127 Big Spring-Toyah 153
Texarkana-Fort Worth ...	253	Toyah-El Paso 194 Texarkana-Longview Jct . 90 Longview Jct-Fort Worth. 159
<hr/>		
Passenger Service		
Fort Worth-El Paso	615	Fort Worth-Big Spring ... 267 Big Spring-El Paso 348

provement over the similar period in 1925, for example, when 143 lb. were consumed in freight service, and 206 lb. in passenger service.

The results obtained from this activity speak for themselves. In 1920, the transportation ratio was 43.88, as compared with 30.95 in 1929, and the operating ratio was reduced from 89.52 to 69.70 during the same period. Meanwhile, the net income increased from \$2,390,832 in 1920, to \$6,130,074 in 1929.

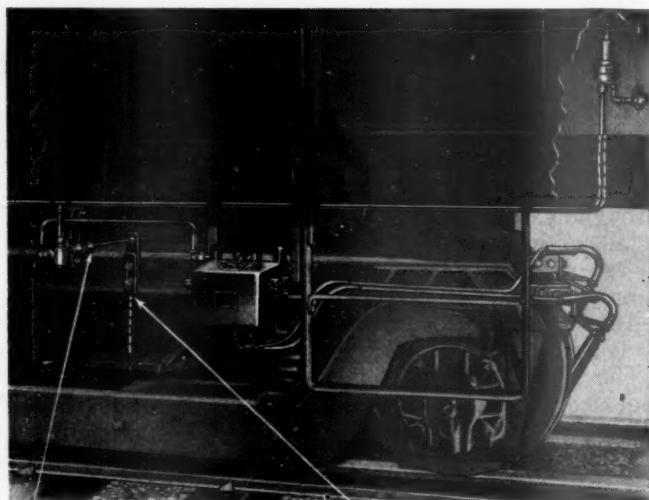
Power Rail-Car Flange Oiling

EXCESSIVE wear on the flanges of power rail-car wheels, as well as those of electric locomotives, is said to be eliminated by application of a new design of oscillating control applied in connection with the locomotive flange oiler, made by the Hoofer Manufacturing Company, 4710 Armitage avenue, Chicago.

This flange oiler, of the pneumatic type, uses relatively inexpensive low-grade oil which is applied by means of oil shoes, each of which has an oil passage leading directly to the point on the flange where lubrication is most needed. Asphaltum road oil No. 3 is recommended for winter and No. 4 for summer, this oil being of a heavy consistency which causes it to adhere to the flanges and not congeal in cold weather.

The Hoofer equipment for oiling the flanges of power rail-cars, or similar electric-driven equipment, is shown in the illustration. In the cutaway section, at the upper right corner of the illustration, is shown the pressure-control valve, through which air passes from the main reservoir of the air-brake system to the Hoofer flange oiling equipment. The flange oiler itself is suspended from suitable brackets, rigidly bolted to the underframe of the car, flexible oil pipes leading to the oil shoes on the truck wheels. The oscillating control unit consists of a special valve actuated by a rod and bracket connection to the truck. The bracket connection to the truck frame, in central alignment with the bolster and center casting, is shown by the arrow at the right, and the swivel head, by means of which the quantity of oil delivered is adjusted to feed about one-half pint for each wheel per hundred miles, is indicated at the left arrow.

In operation, air pressure from the main reservoir, which may vary from 80 to 130 lb., is reduced at the pressure control valve to about 5 lb. in excess of the



Hoofer Flange Oiler and Oscillating Control Unit as Applied to a Power Rail Car

normal brake-pipe pressure. The design of the oscillating control unit is such that each time an oscillating movement takes place between the truck and the body of the vehicle, the control valve is opened, permitting a certain amount of air to pass to the flange oiler proper, operating the discharge pistons and carrying a certain amount of oil to the flanges. The flange oiler, or lubricator, is equipped with four of these discharge pistons so that oil can be supplied to the oil shoes and flanges on both the front and back wheels for operation in either direction operation, if desired.

The adjustment of the swivel, or control head, at the left arrow, is made to suit the curvature of the track and regulate the frequency at which the lubricator will operate. The amount of oil discharged may also be regulated by feed nipples of greater or lesser capacity. A strainer, suitably located in the feed line to the operating valve, prevents scale and other foreign matter from interfering with its operation. The design of the lubricator, itself, also provides a mechanical means for clearing the restricted passages in the discharge piston and thus promotes reliability of operation. The oil shoe riggings are furnished with right and left shoes, which may be installed in either a declined or an inclined position, whichever is more convenient. The fact that the air current used in this flange oiler has been somewhat warmed during compression, and then passes with the oil through the oil lines and the oil shoes, contributes to the successful operation of the oiler in winter months.

* * *

NOT TRANSFERABLE.	Lake Shore & Michigan Southern Railway Co.	
PASS	C. Burchell May	
From	Buffalo	
To	Toledo	
ON ACCOUNT OF		
June 17, 1869.		
Conditioned that the person accepting this free Pass assumes all risk of accident to his person or property, without claims for damages on this corporation.		
H. T. Lawrence Vice Pres.		
Good for one trip only during 1869.		

An Old L. S. & M. S. Pass

Why Fund the Railroad Pension Plan?

Pensioners and pension payments promise to grow steadily, reaching a peak in about 50 years

By Murray W. Latimer

Industrial Relations Counselors, Inc.¹

RAILROAD men must have been wondering in recent years just why so much discussion has been raised concerning the necessity for making some financial provision for the pension plans now in effect on the large majority of American and Canadian railroads. Looking at the figures for pension payments in recent years and noting that in 1925, for example, the total amount of pension payments as recorded under Interstate Commerce Commission account 457 amounted to only 0.7 per cent of the payroll and in 1927 to about 0.8 per cent of the payroll (leaving out certain items in account 457 which were not pension payments), there must have been some question as to what all the fuss was about. This wonder probably increased when the pension payments were related to operating revenues and the fact noted that the complete omission of account 457 would have reduced the ratio of expenses to total revenue from 73.0 to 72.6 per cent, or relatively by less than 0.6 per cent.

The question, however, is now by no means as simple as would appear at first sight. If one were to go further and note that the ratio of pension cost to payroll in 1908 was 0.21 per cent as compared with a figure four times higher 20 years later, the picture would be considerably different; and if it were noted further that the ratio of pension payments to net income had increased at an even greater percentage, a still further investigation would be warranted. This article will attempt to give some idea as to the past rate of growth in the number of railroad pensioners and the amount of payments to them, inquire into the causes of this growth, and, secondly, attempt to determine whether or not the causes which have operated in the past are likely to continue to operate, and if so, for how long, and, third, show why current funding cuts down the charges which must be made to operating expenses on account of pension payments.

Rate of Growth of Pension Payments

In the course of an investigation made by Industrial Relations Counselors, Inc., on the subject of industrial pensions, data were obtained from a number of railroads on the amount of pensions and pension payments. The pension payments in most cases were identical with account 457, although in certain instances other charges, mostly of an incidental character, had been put into the account. In the analysis which was made of the actual growth of payments all such extra charges were eliminated. By a mathematical formula the average rate of growth of the number of pensioners and the amount of pension payments was calculated for 35 railroad systems. The periods, of course, differ—ranging from 4 to 42 years. In general the rate of growth tended to decrease the longer the pension system was in operation, though this was not strictly true

as between individual railroads. The data indicated that the rates of increase for number of pensioners ranged from an average of 6.3 per cent per annum in one case in which the pension plan had operated for 20 years, to 42.1 per cent per annum in a case in which the plan had operated for only 11 years. The average rate of growth in the number of pensioners on all railroads (with formal pension plans) in the period 1900 to 1927 was 11.9 per cent per annum.

The growth in the amount of pension payments was considerably greater, the range being from an average of 9 per cent per annum to 63.2 per cent per annum; for all railroads with formal plans for the 28-year period the average rate of increase was 15.3 per cent per annum. The tremendous rapidity at which pension payments have been growing can be appreciated when it is realized that this last percentage rate means that payments have been doubling every five years. It ought to be remembered, too, that even at the rate of 6 per cent the amount of payments will double in about 11 years. That this lower rate is by no means out of the question for the future can be seen when it is noted that in the case of the pension plan which operated for 42 years the average rate of increase in pension payments was more than 9 per cent per annum.

Factors Which Cause Increase

What have been the factors which caused this rate of increase? There are several of them. First of all, there has been the rapid rise in the level of wages in the period in which pension plans have been operating. Next, there is the great growth in the volume of employment on railroads. In the third place, the longevity of the pensioners themselves after being put on the pension roll has played a part in the increase. There has also been probably a decreasing rate of labor turnover. Finally, the number of retirements for disability has increased more rapidly than those for superannuation.

It is practically impossible to isolate the influence of each of these factors separately in order to ascertain precisely the effect of each on the growth of pension payments. The factor of increased employment has unquestionably been a most important one. The number of railroad employees has roughly increased two-and-one-half times since 1890, though there has been a decline since 1920. Even with the same proportion of each year's additions to the payroll surviving in employment to become ultimately eligible for pension, this factor alone would produce a corresponding increase in the number of pensioners. Judging by the present situation on the railroads it is not likely that the succeeding generation will witness the rapid increase of railroad employment which the last generation did. Nevertheless, the effect of increased employment of the last generation is by no means completed as yet. The typical railway pension plan requires that the employee serve at least 20 to 25 years before becoming

¹ This article is a summary of material collected by Industrial Relations Counselors, Inc., in the course of an investigation of industrial pension systems which is soon to be published in book form.

eligible for pension. This requirement, however, is rather below the average period of service actually spent on the railroads by employees who are granted a pension, this latter average being from 35 to 37 years if the data on several large railroads can be relied upon to represent the situation on all railroads.

So far as it has been possible to ascertain from the employment policies of railroads, it appears that the prevailing practice in recent years in laying off or allowing turnover to take its course has been such as to keep in service as far as possible, other things being equal, the older and longer service men. The decline in employment, therefore, will probably not affect greatly the number of persons who become eligible for pension in the 30 or 35 years succeeding 1920. On the whole, it seems not unlikely that, assuming the ordinary rate of withdrawal to remain unchanged, the peak of retirements on railroad pension plans will not be reached prior to 1950 or 1955.

It is ordinarily assumed that the rate of labor turnover in general has declined since 1920. This is certainly true in manufacturing industries where a considerable body of data have been collected. While no similar data exist for the railroads, it apparently is the opinion generally that this experience will hold good for them also. If this be true, it is probably not too much to say that the decline in employment has been offset by a greater stability of the labor force, so that the estimated date of the peak in number of newly retired pensions is not so wild a guess as might at first sight appear.

Average Duration of Life

Aside from the normal turnover of the labor force, the mortality rates of workers appear unquestionably to have declined. It is well known that the average duration of life has increased to a considerable degree in the past 30 to 40 years. A considerable part of this increase, in so far as the general population is concerned, has been caused by a decline in the infant mortality rate. Among industrial workers there has been an increase in the average duration of life, whether measured from birth or from later ages.

In 1911-1912, for example, the average duration of life after 20 years for white males in the Metropolitan Life Insurance Company industrial department was 36.87 years. The industrial department of this insurance company probably represents experience of wage-earners more accurately than any other data in existence. In the period 1909 to 1911, roughly corresponding to the period above mentioned, the average duration of life for white males from age 20 in the original registration states of the United States, representing the experience of the general population, was 42.71 years. The average length of life after 20 for wage-earners was only about 86 per cent of that for the general population. In 1926, however, the expectancy of life for white male wage-earners aged 20 had increased over 15 per cent to 42.49 years, while the expectancy for the same age and race in the general population had increased only 3½ per cent to 44.22 years. In the latter year, therefore, the duration of life for wage-earners was 96 per cent of that for the general population.

Similar increases appeared also for higher ages. At 50, for example, the expectancy of life for wage-earners increased 12 per cent during the 15-year period, whereas there was no change at all for white males in the general population. The increase in the expectancy of wage-earners apparently is still gaining on the expectancy of the general population, so that industrial companies may expect to have a larger number of pensioners

from the operation of this factor. Although the way pension plans are drawn up at present makes mortality prior to retirement a factor of less importance than certain others, it is one, nevertheless, which must be taken into account.

Disability Retirements

The problem of disability retirements on railroads has apparently been one of rather considerable importance. Fourteen railroads were able to furnish Industrial Relations Counselors, Inc., with data both for service and for disability pensions. In eight of these cases the disability retirements had outnumbered the service requirements, and in only one case was the percentage of disability to total retirements less than 25. Moreover, in 10 of the 14 companies the rate of increase of disability pensioners had been more rapid than the rate of increase for service pensioners. There are several possible explanations of this. The rates of disability may have been increasing; perhaps the age at which railroad employees become no longer useful to the service has been declining. In some cases retirement practice may have come to be more liberal. These factors, particularly the first two, are quite closely related, and with the increasing mechanization of industry, changes in methods both in the shops and in various operations of railroad service, it is reasonable to suppose that their operation will continue for some time at least.

Longevity of Pensioners

Even though the number of persons newly retired each year shows no increase but remains at a practically constant figure the pension roll will continue to grow for many years. This is because the persons placed on the pension roll continue to live on the average for a considerable number of years, and because if equal numbers are pensioned every year and mortality remains constant after retirement, the number of pensioners will grow until the last survivor of the first group of pensioners is dead. This means that according to present data on longevity of pensioners, if the same number of pensioners be retired at the same age each year the pension roll will grow for some 30 to 35 years. Supposing, therefore, that the peak of pensioners occurs about 1950 or 1955, the total number of pensioners on the rolls will grow until 1980 to 1990. That is to say, the number of railroad pensioners will probably continue to increase for another two generations.

Increase of Level of Wages

The final factor which will be here discussed concerns the increase in the level of wages. Railroad pension plans practically without exception base the pension payment on the wages earned during the last few years of service, or the average of the few years in which pay was highest. Under conditions which have prevailed for a number of years the two methods have amounted to about the same thing for most employees. Average wages on railroads have more than doubled since 1914 and are almost three times the figure for 1900. Data on a few large railroads indicate, moreover, that the increase in the average pension base of pensioners—that is, the average of the last 10 years' earnings—have increased less rapidly than the average of per capita earnings on those same railroads, indicating that the older employees have not gained to as great an extent by the increased level of wages as younger employees, though changes in the occupational composition of those retired may have been a factor.

At any rate, average annual earnings seem to have become stabilized in the last few years and the best opinion at the present time seems to lean to the view

that changes in general price levels will not be a primary factor in changes in money wages during the next generation. On the other hand, there exists nowhere any considerable body of opinion which regards any considerable permanent reduction in wages as at all likely. Thus it is reasonable to conclude that the probability is for the level of pensions now being paid by railroads to persist for a considerable period unless the plans themselves are changed from their present form.

Future Level of Pensions

In order to get some idea of the future level of pensions, the experience of one railroad from 1900 to 1927 was taken as a base and certain very conservative assumptions were made about the future increase in pensioners so as to be able to calculate the number of pensioners on the roll for a period of years in the future. The actual average pension payment was taken for each year from 1900 to 1927, and it was assumed that the 1927 average would be constant thereafter. It was also assumed that the average period of service for pensioners was 35 years and that the number of pensioners would increase from 1927 to 1962 at the rate of 25 per year, or at an average increase of about $1\frac{1}{2}$ per cent per annum. The number of retirements after 1962 was assumed to be constant. Mortality after retirement was assumed to follow the group annuity mortality table.

The actual number of retirements and the actual average pension was followed from 1900 to 1927, but instead of taking the actual average number of pensioners on the roll from the books of the railroad company each year, the latter numbers were worked out from application of the mortality rates to the numbers of retirements. The resulting amount of payments, however, followed very closely the actual experience of the railroad, the discrepancy in 1927 being only about 5 per cent. Without going into detail the calculations based on these assumptions indicated that the peak of pensioners and pension payments would occur in 1998 and that the payments in that year would be 3.03 times the 1927 payments. In 1927 the average railroad plan had been in operation about 17 years. The calculations here described showed peak payments to be 9.3 times payments in the 17th year.

Methods of Funding Pensions

An analysis was also made as to the effect of accumulating funds currently rather than charging pension payments to operating expenses as they accrued. Three methods of accumulating funds were compared: the single premium immediate annuity, that is, setting aside that amount at retirement which would be sufficient to pay the pension from the date on which it is granted to the date of death of the pensioner; the level premium method, that is, charging each year an amount which at interest would amount to $1/35$ of the value of the pension at retirement; and the deferred annuity method, that is, setting aside each year the present value of $1/35$ of the ultimate pension deferred to the age of retirement. The distinction between these latter two methods is that whereas the former contemplates setting aside the same sum each year, the latter sets aside a gradually increasing fund annually since each year finds the individual employee one year nearer the date of retirement, so that the interest-earning period gradually becomes less.

Under the immediate annuity method, the amount to be charged to operating expenses each year gradually increases to 1962 and stays constant thereafter since by assumption the number of pensioners to be retired increases to that date and then remains stationary.

Comparing the greatest single annual charge under this method with the greatest payment to pensioners, we find that the charges can be reduced by about 30 per cent. The total charge for the single premium annuity is greater than the total payments for 66 years. Under the level premium method the assumption was that the charges to operating expenses started when the first group of employees came into service, that is, in 1865. Under this method, of course, funds were accumulated for 35 years before any payments were made at all. The comparison, however, would hold good for any years so far as current costs are concerned and this article does not propose to deal with the problem of accrued liability. Under this plan the maximum annual charge is a little less than 34 per cent of the maximum pension payments and the charge under the assumptions given is higher than actual pension payments for 59 years.

Under the deferred annuity method, which also starts accumulation of funds when the employees are taken into the service, the maximum payment is about 38 per cent of the maximum pension payments. Using the total payments to any particular group of pensioners under these assumptions as 100, the total charges to operating expenses when the immediate annuity system is used are 74.35, under the deferred annuity 36.79, and under the level premium method 31.30. Under the latter two methods it is assumed, of course, that the charges began when the employees entered the service. There is thus an absolute saving in the use of these funding methods. In actual practice, of course, the amounts cannot be worked out exactly since setting aside of funds always necessitates some estimate of the future which can never be made with any great accuracy. Nevertheless, in principle these relationships hold true.

Why Fund Pensions?

The sole cause of these reductions in the amount of charges to operating expenses lies in the fact that the reserves earn interest which is later used to pay pensions. In the illustrations above, interest has been assumed to accumulate at the rate of 4 per cent per annum. This raises the question of why railroads should accumulate reserves when by using the money themselves they may earn greater rates of interest. Without going into the moot question of whether or not railroads should be allowed to earn interest on certain classes of reserves, it may be said that the practice of accumulating funds of some sort rests fundamentally on two other grounds beside the saving which has already been outlined.

First is the question of accurate accounting. Suppose, for example, that a subsidiary railroad which has been operating under the pension plan of its parent for some reason is discontinued and a bus line is substituted for it. Some pensioners are already on the roll, some are eligible and will have to be pensioned because of their inability to cope with the new conditions, others will become eligible as time goes on. The depreciation reserve takes care of the track and equipment which is necessarily junked or that part of it which cannot be used in other operations. It was a proper charge against the operating expenses of the railroad while it was in operation and quite clearly was properly separated from any connection with the operations of the new bus line.

Wherein lies the difference between the depreciation of material property and the depreciation on the lives of the employees in so far as the material factors are concerned? The growth in pensioners and pension payments for the bus line presumably will be about the same as for the railroad had it remained in operation; that is, it has remained a continual growth. Will it not

be a distinct misstatement of the actual earnings of the bus line if the pension payments are charged against it? A problem of similar character arises, though it is not always recognized, when a road which maintains a pension system takes over another line which does not. The situation must unquestionably be dealt with in any comprehensive plan for merging existing railroads into a few large systems.

The first consideration in part brings up the second one, namely, that where there is such misstatement of earnings the dividend policy is likely to be such that proper surplus is not maintained. Even if it be argued that the railroad could earn more money than would be allowed to accumulate on the reserves or than could be earned on money invested outside the railroad business, when the payments begin to mount up to staggering figures it might unfortunately be discovered that the money which should be in hand to pay pensioners has instead been paid to the stockholders. Should such a contingency arise in actual practice, it is unnecessary to picture the confusion which might result in the way of lessened public reputation for the railroads and friction with employees who had spent their lives in the service in the expectancy of a receipt of pension. That it is a by no means remote contingency seems obvious from the figures which have been presented. The only remedy is proper accounting and proper funding. In all questions where, as in this one, interest is concerned, time is money, and in view of the amounts involved, sums that almost stagger the imagination.

S. P.-Cotton Belt Hearing at Dallas

(Continued from page 924)

more of a liability than an asset to the Illinois Central.

Mr. Upthegrove stated that the Cotton Belt has a surfeit of short lines and that he deemed it inadvisable to undertake further extensions of mileage at this time by the acquisition of additional short lines. The Paris & Mount Pleasant is a direct connection of the Frisco and should be allocated to that road rather than to the St. Louis Southwestern, he said. Acquisition by the Frisco would preserve existing competition both at Mount Pleasant, Tex., and Paris. He gave assurance that the Cotton Belt's existing interchange with short lines would be preserved after acquisition by the Southern Pacific.

Formal protest against the consolidation of the two lines was filed on October 22 by the Missouri Pacific, whose counsel cited the Gould-Huntington agreement which was executed on November 26, 1881. That document specified that the route of the Missouri Pacific, with its affiliated connection with the Texas & Pacific, and the route of the Southern Pacific should be operated as one continuous line. It further specified that the Southern Pacific should carry all through business of the Missouri Pacific and the Texas & Pacific on as favorable terms as for any other connecting lines, and that through routes should be maintained between the Pacific coast and the East with as low rates as by any other route. Attorneys for the Missouri Pacific further stated that the agreement provided that the Southern Pacific would not construct or promote lines which would duplicate those of the Missouri Pacific and the Texas & Pacific, or any line connecting with the Southern Pacific which would duplicate the Missouri Pacific lines.

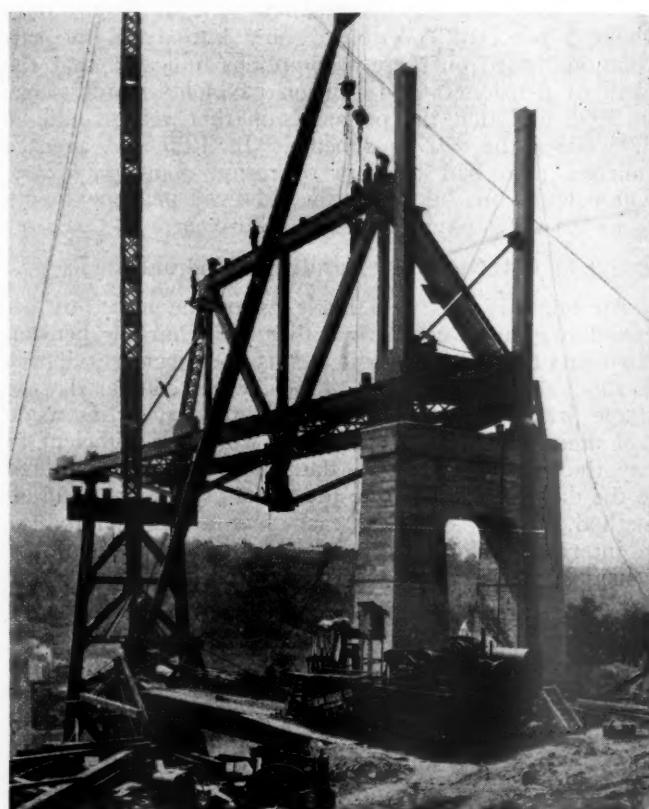
The Rock Island attorneys told the examiner that that road desired no disturbance of present traffic arrangements. F. A. Adams, assistant freight traffic man-

ager of the Rock Island, testified that that road faced the possibility of a heavy loss in traffic from the Southern Pacific from the Pacific coast received by it at Tucumcari, N. M., if this is diverted to the Cotton Belt at Corsicana and other North Texas gateways. In 1929 the Rock Island delivered 29,535 loaded cars to the Southern Pacific at Tucumcari. In the same year the Southern Pacific delivered to the Rock Island at the same point, 52,355 cars, of which 42,118 were perishables.

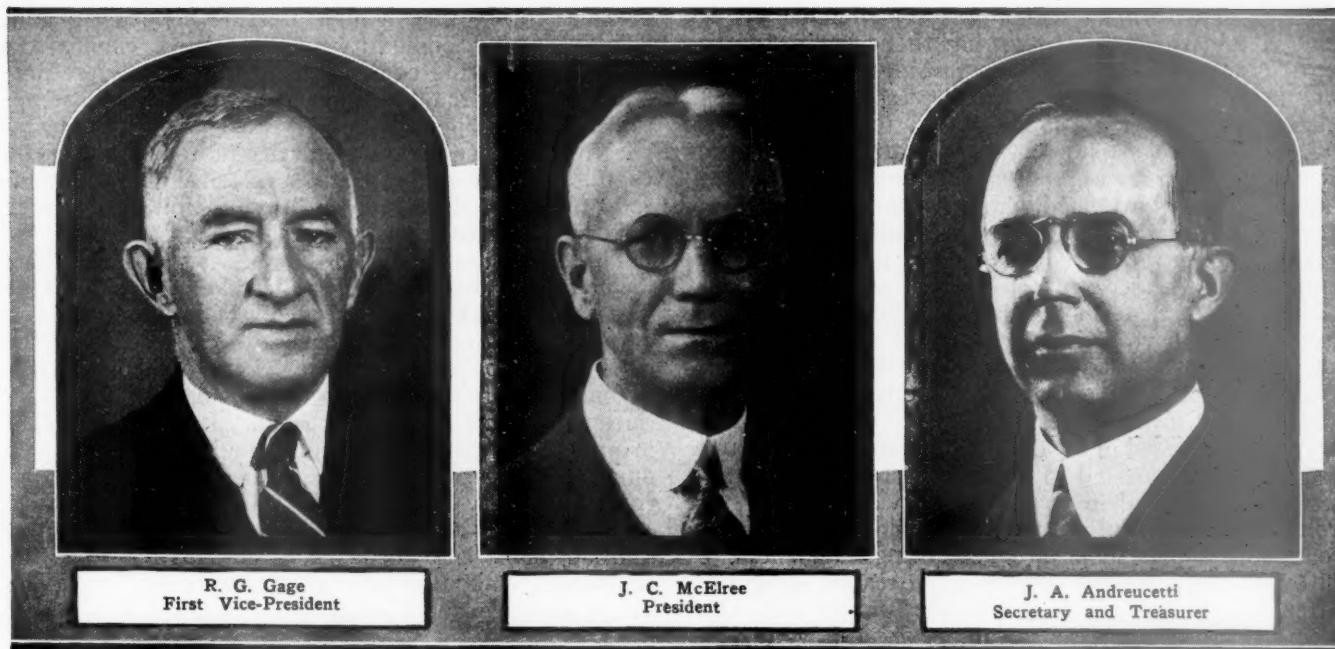
Added to the trunk line opposition at the hearing was the intervention of numerous short lines, all desirous that present traffic routings and interchange points be preserved intact, and in a number of cases asking definitely that they be made a part of the proposed Cotton Belt-Southern Pacific system. B. S. Atkinson, senior vice-president of the Louisiana, Arkansas & Texas, asked that the Southern Pacific take over that line if the latter acquires the Cotton Belt. He said that the L. A. & T. is seeking a permanent interchange arrangement at Greenville, Tex., with the Cotton Belt, to provide it with an entrance into Dallas. This short line is now grouped with the Illinois Central in the Commission's consolidation plan. Others making similar requests were the Groveton, Lufkin & Northern, the Waco, Beaumont, Trinity & Sabine and the Paris & Mount Pleasant.

T. H. Meeks, assistant to the general manager of the Texas & New Orleans, testified that savings in operation by the consolidation of facilities at 12 of the 14 points of contact between the Southern Pacific and the Cotton Belt would amount to \$316,687 per year. H. M. Lull, executive vice-president of the T. & N. O., stated that changed conditions required that the Southern Pacific have northern connections, since the transcontinental business is decreasing. Increase of the perishable traffic from the Lower Rio Grande valley, Laredo and Eagle Pass demands a permanent route to St. Louis.

* * *



Construction Work on New Bridge at Banning, Pa., for the Pittsburgh & West Virginia's 38-Mile Connellsville Extension



Electrical Men Meet in Chicago

Twenty-first annual convention of the Association of Railway Electrical Engineers marked by splendid attendance

THE Association of Railway Electrical Engineers held its twenty-first annual convention at the Hotel Sherman, Chicago, October 21 to 25. The exhibit of the Railway Electrical Supply Manufacturers Association, held in conjunction with the convention was replete with up-to-date electrical equipment, 65 exhibitors displaying their products.

The first session was opened on Tuesday morning by the president, J. C. McElree, electrical engineer of the Missouri Pacific. In a brief opening address he reviewed the growth of the association and drew attention to the serious problems that were confronting the railroads, pointing out the increasing demands made by the public and the efforts of the roads to give better service under difficult conditions. Programs of strictest economies are necessitated and one of the important lessons to be learned is the need for closer co-operation due to its flexibility and ready application, electricity is becoming more and more a dominating factor in the economical operation of the railroads and is being looked to for the solution of many complex problems.

The report of secretary-treasurer, Joseph A. Andreucetti, electrical engineer of the Chicago & North Western, showed the association to be in excellent financial condition. The total membership, including both active and associate members, number is 551.

Election of Officers

The officers for the ensuing year elected by letter ballot were announced as follows: R. G. Gage, chief electrical engineer, Canadian National, president; F. W. Reed, chief electrician, Northern Pacific, first vice-president, G. W. Bebout, electrical engineer, Chesapeake

& Ohio, second vice-president. The following three members were chosen for the executive committee. F. G. Baker, electrical engineer, St. Louis-San Francisco; A. M. Frazee, electrical engineer, Duluth, Missabe & Northern; and R. E. Gallagher, assistant electrical engineer, Louisville & Nashville.

Radio

The first report presented was that of the committee on the application of radio to railway service. It was unable to report much progress during the past year regarding communication between locomotive and caboose on long freight trains because of the attitude of the Federal Radio Commission in prohibiting the use of such equipment until it has been given satisfactory and reasonable statements of the necessity for such equipment by the railroads interested and desiring to use it. The few tests that have been made have shown this type of communication to be satisfactory.

The use of radio as an entertainment feature on passenger equipment has shown the greatest development on the Canadian National and the report included a wiring diagram showing the methods used in latest radio installations on this road.

From the discussion it appears that the grounds upon which the Federal Radio Commission might look favorably upon the application of railroads for permission to use radio communication on freight trains is the extent to which such an improvement would benefit the general public. One member described briefly a system of inductive communication developed on his road through which it was possible for a train dispatcher to keep in touch with any freight train crew on his division.

The report of the committee on illumination included the usual tables showing the demand for the various types of lamps used in railway service. Flood-lighting of railroad yards was treated briefly by the committee, attention being directed to the possibility of developing a satisfactory 2,000-watt lamp and projector. The matter of using a series system for supplying power to yard floodlighting installations was not favored by the committee who believed that advantages gained by centralized control inherent with the series system could be secured equally well with the multiple distribution system and at the same time eliminate the hazard of high voltage. An appendix to the report included specifications for large tungsten filament incandescent lamps, embracing specifications for mechanical and physical inspection test.

It was suggested in the discussion that the lamp manufacturers be requested to make some type of vibration test of lamps used in locomotive service. Thirty-two volt lamps previously used on extension cords for roundhouses and shops are now being supplanted by 110-volt lamps for this purpose, the reason being that safer lamp-guards are now available for this use. One member pointed out the advantage of full voltage at lamp terminals as a favorable factor in the series system of floodlighting.

Purchase of Electrical Energy

The committee on the purchase of electrical energy concerned itself with a study of the various rates and electrical contracts now in operation and an analysis of electrical energy bills of different railroads. The major part of the report consisted of a tentative form for the purchase of electrical energy which outlined the various factors to be considered in drawing up power contracts between railroads and power companies.

The discussion on the purchase of electrical energy was most interesting and instructive. A number of power company representatives were present and they stated the power company's view point at some length. These representatives expressed entire willingness to cooperate with the railroads in the matter of developing suitable contracts. The trouble appears to be in the great variety of conditions to be met with on the railroads. One of the greatest obstacles lies in the fact that many of the railroads do not have any centralized authority with whom the power companies can deal. The whole problem of purchasing electrical energy is one that can well be studied diligently by railroad men with very great advantage to the roads. Numerous instances were cited during the discussion where large reductions in power bills were effected through an intelligent study of the conditions under which the power was used.

Power Plants

Various types of furnaces and methods of combustion formed a large portion of the report of the committee of power plants. Different types of mechanical stokers, together with the best kind of fuel for use with each, were indicated and tables, including data on a wide variety of coals, were given. An analysis of mixed pressure extraction condensing turbines was made which included a curve showing graphically the consumption of high pressure and low pressure steam per kilowatt hour and the vacuum obtained with a low level jet condenser. A second diagram indicated the steam consumption per kilowatt hour and vacuum obtained by closing the valve which admits exhaust steam to the low pressure stages, thereby converting a mixed

pressure turbine into a high pressure condensing unit. The increasing popularity of the Diesel engine was pointed out by the committee and diagrams were presented showing the thermal efficiency and fuel consumption at various percentages of rated loads. The comparative cost per kilowatt capacity of four-cycle Diesel engines and natural gas engines was also shown graphically. A brief discussion of the principles of various power plant instruments concluded the report.

The discussion touched on a number of points which the committee had not included in the report. One of these was the labor costs involved in the operation of power plants. It was generally conceded that the labor costs for railroad plants were higher per unit of output than large commercial plants. This is because the plants are usually small. It was stated that many railroad plants could and should be closed down during non-heating months. Other methods for deriving necessary power can be utilized, such as Diesel engines. Attention was drawn to the fact that most railroad plants lack adequate meters and recording instruments, without which it is practically impossible to tell what a plant is doing.

Motors and Controls

Motor and control equipment for cranes and hoists was the first subject presented by the committee on motors and controls, the advantages of a-c. and d-c. equipment being pointed out for installations of various sizes. Power factor correction was treated at length and a number of diagrams were given showing the conditions obtained by leading and lagging currents. Advantages of starting motors with and without compensators were discussed and speed-current curves and speed-torque curves were presented showing the action of motors with and without compensators.

The committee emphasized the importance of high frequency tools and pointed out the various advantages obtained by their use. In this connection a group of interesting tables were presented showing the relative costs of pneumatic and high-speed frequency tools.

Much of the discussion centered on high frequency tools and upon motor lubrication. It was suggested to the committee that it study the application of high frequency tools in territory where 25-cycle current was used. Regarding lubrication problems the chief factor in the operation of sleeve bearing motors is to keep the oil clean and the oil level constant. With proper attention to these details motors can be made to operate for long periods without attention.

Train Lighting

The report of the committee on train lighting was one of the longest presented at the convention. It began with the subject of electric power for refrigeration in dining, club and business cars. Brief descriptions of such cars in service on the Baltimore & Ohio and on the Santa Fe were given. Mechanical refrigeration for cars used for the shipment of perishable freight was also discussed at length.

A brief resumé of various positive axle lighting drives that have been in operation during the past year was given, together with mileage statistics and operating data.

A number of standards for battery capacity rating were presented for consideration, including voltage limits, temperature, specific gravity and name plate for both lead and nickel iron batteries.

Most of the discussion on the train lighting report was concerned with the air conditioned diners recently placed in operation on the Baltimore & Ohio and on

the Santa Fe. Although these equipments differ in a number of respects and are operated under dissimilar conditions, representatives of both roads report practically no trouble with their respective equipments.

The use of positive drives which have been more or less extensively installed on some roads during the last year or two was reported as giving satisfactory service and in practically all instances they have made possible the elimination of much battery charging in terminals.

Railway Automotive Equipment

The report on railway automotive equipment was brief. A number of important recommendations were made, however, among them being the use of roller bearings for all power truck journals. The committee also felt that high tension magneto ignition should be used until battery type ignition had attained a higher efficiency. The use of low grade fuel in place of gasoline in internal combustion engines other than Diesel was felt to be of doubtful economy. Few roads are making use of such fuels and these are reluctant to give out definite information regarding operating costs. For the lighting of motor cars and trailers the committee recommended the use of independent lighting units on runs where they could be used to best advantage. This type of installation involves the use of a 32-volt generator connected through an automatic switch to the main storage battery, the generator to be operated by a gas engine that can be started or stopped either from the engineer's position or at the lighting unit. A second plan, using a separate battery for lighting, was considered and a third plan for starting the generator automatically with a current relay was also presented.

The discussion of the report was concerned largely with the advantages and disadvantages of battery ignition and magneto ignition systems for rail motor car engines. One member explained at length how satisfactory results had been obtained on his road with battery ignition after suitable equipment had been secured.

The committee on locomotive electrical equipment reported 21 locomotives in service equipped with wire conforming to the A. R. E. E. specifications. The subject of pyrometers was discussed at length, the functioning of the apparatus and methods of testing being given in detail. Regarding the fusing of locomotive circuits, information available developed the fact that apparently no standard practice exists. There was no discussion of this report.

Electric Welding and Industrial Heating

The work of the committee on electric welding and industrial heating was divided into three general parts. The first dealt with the nitridizing of steel parts for locomotive and passenger cars; the second with the safe-ending of locomotive boiler flues and superheater tubes; and the third with the heat treatment of elliptical and coil springs for railway service. The layout of a flue welding shop was described and the process given in detail. The section of the report dealing with the heat treatment of springs was practically the same as presented in the same report a year ago except that it was amplified with a number of illustrations showing the detailed construction of the important parts of the equipment used. The subject of nitridizing was briefly touched upon, but its importance was emphasized by the committee and reference was made to a pamphlet published by the Ludlum Steel Company,

Watervliet, N. Y., entitled "Nitrally and the Nitriding Process."

The discussion served to emphasize the value of the nitriding process as applied to railroad work. Particular attention was also directed to the new type of nib used in the construction of steel springs, the improved design of this feature resulting in 100 per cent increase in spring life.

Electric Welding Equipment

The report of the committee on electric welding equipment was concerned with a discussion of the various types of welding apparatus suitable for use on railroads. Both stationary and portable welding units were considered and the relative advantages of each pointed out. The committee did not feel that it was justified in drawing up specifications for welding equipment for special use in the railroad field since specifications were already available which practically conform to railroad requirements. A large portion of the report consisted of the specifications for electric welders adopted by the National Electrical Manufacturing Association, these being published for the benefit of the members. The committee suggested that a careful study should be made of these with a view to pointing out any item that is not in the best interest of the users of welding equipment and in making suggestions that may be beneficial to both manufacturers and users.

The discussion of this report was brief. The advisability of increasing the length of welding cables for railroad use was advocated. The use of the steel structure of buildings for the return current for welding circuits was shown by one member to be inadvisable. Some interesting figures were presented relative to a test for heating locomotive tires electrically. The test indicated that a 50-in. driving wheel tire could be heated in 7 minutes 29 seconds with an energy consumption rate of 223 kw.

The convention closed with the induction into office of Messrs. Gage, Reed and Bebout, the president and vice-presidents for the ensuing year.

Railway Electrical Supply Men Elect Officers

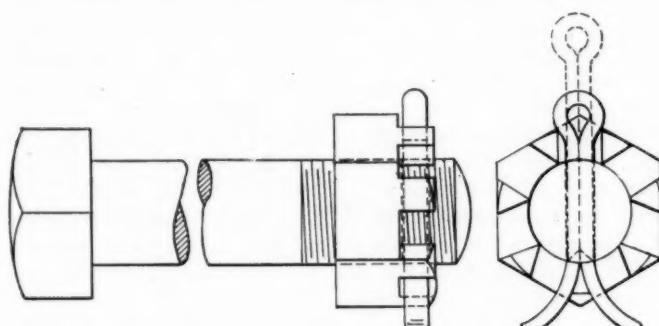
At the annual meeting of the Railway Electrical Supply Manufacturers Association, held on Thursday, October 23, the following officers were elected: Carlos Dorticos, General Electric Company, Chicago, president; Charles Dubsky, Crouse-Hinds Company, Chicago, senior vice-president; C. B. Harlow, Benjamin Electric Manufacturing Company, Chicago, junior vice-president. The following members were elected on the executive committee for a three-year term: H. A. Matthews, U S L Battery Corporation, A. S. Anderson, Adams & Westlake Company, and L. G. Mockenhaupt, Harvey Hubbell, Inc.

At the dinner of the Association of Railway Electrical Engineers and the Railway Electrical Supply Manufacturers Association, held on Thursday evening, October 23, John McC. Price, of the Allen-Bradley Company, and retiring president of the latter association, presented a past-president's gold medal to William Ross of the Pyle National Company, his predecessor in this office. Carlos Dorticos, of the General Electric Company, the incoming president of the association, presented a similar medal to Mr. Price. Mr. McElree, retiring president of the Association of Railway Electrical Engineers, was also presented with a medal by Mr. Andreucetti as a token of his office with this association during the past year. In his presentation remarks Mr. Andreucetti called attention to the fact that Mr. McElree was one of the charter members of the association.

Cooke Micro Nut

A CASTELLATED nut, which can be set to 14 to 22 adjustments, depending upon the size of the nut, and which utilizes a self-opening and self-retaining type of cotter key, is a new product recently brought out by the American Railway Products Company, Inc., South Norwalk, Conn. As shown in the illustration, the castellated nut is milled in such a manner that the castellated portions are of triangular section and arranged so that the apex of one section is at the center of one end of the cotter-pin hole, the other end of the cotter-pin hole being fully exposed between two castellated portions for the insertion of the cotter pin.

When adjusting the nut, it is merely necessary to turn it until the apex of one of the castellated sections is in the center of the cotter pin hole, which automatically alines



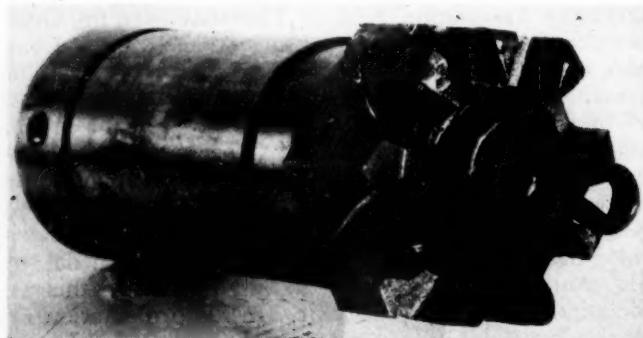
Assembly of the Micro Nut and of the Self-opening Cotter Key

a full opening of the cotter-pin hole on the opposite end of the pin. Thus, a castellated Micro nut with the nine castellated sections has 18 adjustments.

The Micro nut eliminates the necessity of backing off or loosening the nut for adjustment, which is a common occurrence in the use of the conventional type of castellated nut which has only six adjustments regardless of its size.

The range of the many adjustments of the Micro nut depends upon the size of the nut used. The $\frac{3}{8}$ -in. to $1\frac{1}{4}$ -in. castellated nuts with seven castellated sections have 14 adjustments; the $1\frac{3}{8}$ -in. to $1\frac{3}{4}$ -in. nuts with nine castellated sections have 18 adjustments and the $1\frac{1}{8}$ -in. to $2\frac{1}{4}$ -in. nuts with eleven castellated sections have 22 adjustments.

The triangular sections with the apex in the center of the cotter-pin hole automatically opens the cotter keys as it is driven through the pin. The Micro nut does not require a special type of pin, but can be applied to all types of present or new equipment.



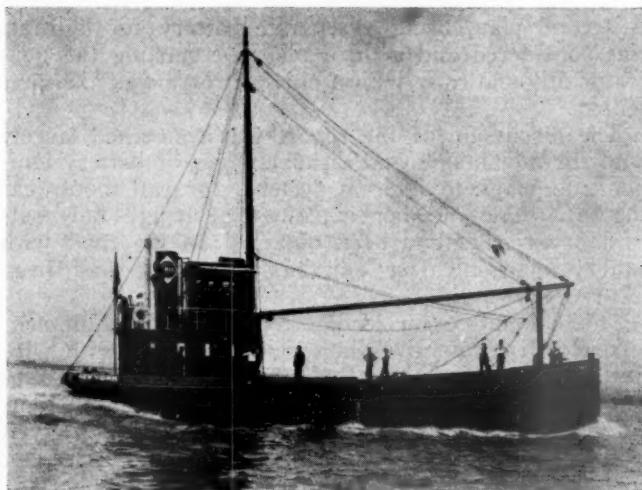
Cooke Micro 1 3/4-in. Nut Which Has 18 Adjustments and Automatically Spreads the Cotter Key

Erie Commissions a New Diesel Lighter

AS a further step in its policy of speeding up freight transportation facilities, the Erie has recently commissioned a new Diesel lighter, the "Dayton," for the handling of l. c. l. shipments between piers in New York Harbor. This unit is one of five which calls at the various shipping points on the New York water front to pick up rush shipments for either east or westbound freight. These vessels carry their own labor forces which permits the rapid handling of freight as soon as it is cleared through the customs and permits loading in cars on the same day for interior points.

The "Dayton" is a sister ship of the Corning which was launched in November, 1927, by Jacobson & Peterson under the name of "Diamond S-89". Both vessels are practically identical as to lines, size, power, auxiliaries, etc. The principal dimensions of the Dayton are: Overall length 91 ft., beam 28 ft., depth of hold 10 ft. 6 in., and draft 8 ft. 6 in.

The main engine and all auxiliary equipment, together with the pilot house and cabin space are located well aft, permitting free access to the deck and hold forward. This design is made possible by the elimination of the boiler which would be required on a



The Erie Lighter "Dayton" for Handling L.C.L. Shipments in New York Harbor

steam vessel. The main propelling engine is a Fairbanks-Morse 360-hp. Diesel engine which provides ample power for easy maneuvering and develops a speed of 11.9 m.p.h. in the congested New York Harbor. Auxiliary equipment consists of a 3-in centrifugal fire pump, a two-stage air compressor and an auxiliary battery-charging generator, all of which are driven by an 18-hp. gas engine.

In addition to the increased cargo capacity for the same net tonnage, the use of the Diesel engine has proved to be much more economical in the use of fuel. This saving is due to the higher efficiency of the Diesel engine and also to the fact that no fuel is consumed while the vessel is taking on or discharging cargo.

The "Dayton" was built by the American Car & Foundry Company at Wilmington, Del., was delivered to the owners on June 12, and was subsequently placed in service on June 16.

Reciprocity Hearings Adjourned

New facts on traffic and purchasing develop as Commission completes investigation at Chicago

THE hearing on reciprocal buying which the Interstate Commerce Commission has been conducting in Chicago since September 30 was adjourned temporarily on October 24. The last three days of the hearings were chiefly devoted to the Illinois Central, from which most of the letters came. Further records of the deal between the Edward Hines Lumber Company and several roads to move its cars were also brought to light and the Santa Fe's record of lubrication investigations was produced.

While the program of future hearings has not been announced, it is reported unofficially that they will be resumed before the end of November and may be held in St. Louis, New York and Cleveland. It is also reported that the commission will endeavor to include shippers among those called upon for information in future hearings.

The voluminous record of the Illinois Central's purchasing activities consisted of evidence of pressure from shippers to influence the railways' purchasing and of the use by the railroad of its purchases to please and placate shippers. W. Haywood, freight traffic manager, in a statement which he asked permission to make at the close of his testimony, said that the Illinois Central was confronted with competition from highway trucks and waterways and is threatened with serious losses in its coal traffic, incident to the development of gas lines and gasoline pipe lines, and he felt it his duty, as a traffic officer, to uphold the investment in the road by doing what he could to develop and protect the industries along its line, and that one way to do this was to purchase from these industries.

A. C. Mann, vice-president of purchases, said frankly that the Illinois Central actively engages in reciprocity and expressed the conviction that the road gets a large portion of its traffic through its purchasing power. The purchasing department furnishes the traffic department with copies of all vouchers to be used in soliciting traffic and also prepares an annual statement showing the total value of purchases from all firms receiving orders for more than \$500 worth of materials during the year. The coal traffic manager recommends the distribution of coal purchasing, and the recommendations of the traffic department concerning other commodities are regularly solicited by the purchasing department. However, Mr. Mann disapproved of paying a premium for traffic, and did not believe that the Illinois Central does so. He said that the pressure from shippers is more acute and affects more commodities than ever before.

Most of the correspondence introduced in connection with the Illinois Central's purchasing activities dealt with negotiations carried on in 1928 and 1929, but one of the exhibits went back as far as 1923. On October 12, 1923, C. H. Markham, then president of the Illinois Central, dictated a memorandum to C. M. Kittle, then executive vice-president, stating that Arthur Meeker (vice-president of Armour & Co.) had talked to him at considerable length about a boiler compound. Later Mr. Markham received a letter from Mr. Meeker on Armour & Co. stationery, in which the latter said:

Some of the executives of Armour & Co. are interested in

a water softener called Sodium Aluminate . . . Although we have been looking for the order for six weeks or so, we have looked in vain . . . I am wondering if you would be good enough to look into the matter.

Vice-president Kittle referred the subject to Vice-president Mann. Mr. Mann found that an adverse report had been made some time before by the general superintendent of motive power to Vice-president L. W. Baldwin, as a result of which the subject had been dropped. Vice-president Kittle revived the subject by conferring with Vice-president Clift and some of the compound was purchased for trial. A short time later, J. J. Pelley, general manager, made a favorable report to Vice-president Clift, and from that time on, the record showed, purchases of the compound began to grow, the quantity purchased exceeding 500,000 lb. in 1929. In July, 1928, the Illinois Central received notice of an increase in the price of the compound and the superintendent of water service wrote a letter to the manufacturer in which he said in part:

Incidentally, we have been paying a rate considerably above that paid by other roads in the past and if we desire to use it in the future will have to submit to a further increase.

The exhibits also contained a letter from the engineering department approving the proposal made by the compound manufacturer to have the railroad furnish annual passes for the representatives of the compound manufacturer.

Illinois Central Coal Buying

A. C. Mann, vice-president in charge of purchases; J. J. Bennett, purchasing agent, and J. F. McMahon, coal traffic manager, were questioned at considerable length about the road's coal purchases. The commission was given to understand that the Illinois Central bought its coal from mines on its own lines under contracts whereby it received from these mines a specified amount of revenue traffic, and it particularly wanted to determine the circumstances under which the road could and did make various other arrangements for coal. Mr. Bennett said the negotiations resulting in placing an order with the Peabody Coal Company during 1929 for 50,000 tons of coal in return for a promise by the Peabody Company to increase its coal traffic 125,000 tons, were handled by the coal traffic manager. He understood, however, that the Peabody Coal Company was a sales organization belonging to the Insull interests and, when asked if this company had mines on the Chicago & Illinois Midland, said, yes.

Mr. McMahon said the Peabody contract had been negotiated by his predecessor but he understood that it was a special deal made to get commercial business. It was explained that the contracts with the mines only called for a specified minimum and left the road free to go into the market for coal that would ordinarily be obtained from the road's own mine if it were operating.

A month after the Illinois Central had ordered the coal from Peabody, B. J. Rowe, then coal traffic manager, made a contract with the United Collieries Company, a Cleveland concern, to take 60,000 tons of coal

at the rate of 30 cars a week for a year in return for 150,000 tons of coal traffic. The reason for the contract was brought out in a letter received by the purchasing agent, in which the coal traffic manager said in part:

Please have it understood by Mr. Young's department that we are obligated to take 30 cars per week, no more, no less, account of this contract. It is a trade made for other tonnage and cannot be reduced or increased as our requirements fluctuate.

After making this contract, the coal traffic manager was informed by the United Collieries Company that the coal would be purchased through the Peabody Coal Company. A week later, the Collieries Company wrote Mr. Rowe that it had additional coal traffic to trade for coal orders, and added:

We will be glad to handle this additional fuel business as you so desire, either through the Peabody Coal Company or direct with whatever other mines you might specify in case the deal could not be effected through Peabody.

It was disclosed that the United Collieries Company was the coal purchasing unit of the Utilities Power & Light Co. which had mines in Eastern Kentucky (outside of Illinois Central territory) and also operated as a sales agency for other mines. In view of the letter from the Collieries Company giving the road the option to buy additional Collieries coal through the Peabody Company, the government wanted to know if the original arrangement to secure the Collieries coal through the Peabody Company had been made at the request of the Illinois Central, a question on which Mr. McMahon was not clear, since the negotiations had been handled by his predecessor. The examiners also asked if the coal traffic promised by the Collieries Company was associated in any way with the coal traffic promised by the Peabody Company in its contract. Mr. McMahon was certain that this was not the case.

Traffic Pressure Severe

Letters received from the Iroquois Coal Company and from J. F. Marlowe & Co., in 1929, concerning coal purchasing, are typical of solicitations made upon the Illinois Central for coal purchases. In its letter, the Iroquois Coal Company said in part:

We have been advised repeatedly that we would get an order but as yet it has not been received. We are going to change our routing and will switch it back to the Illinois Central only after we receive some fuel orders.

In its letter, J. F. Marlowe & Co. said in part:

It seems strange that your coal man calls on us every week for tonnage when we get so little consideration from you. I am about converted to the fact that we cannot expect any favors from the Illinois Central purchasing department and, if we are so poorly recognized, we can favor the competing railroad here with our tonnage for retail subsidiaries and our wholesale trade.

Subsequent letters disclosed that J. F. Marlowe got some tonnage. Several letters were introduced during the hearing showing where the purchasing agent, acting upon the recommendations of the coal traffic manager or with the approval of the coal traffic manager, purchased "distress" and "no bill" coal from various mines or brokers and commonly waived demurrage and reconsignment charges on such coal. Mr. McMahon explained that such coal is bought principally as a "help-out" to mines from allowances not covered by contracts with operators and the practice was to waive the demurrage charges as of the time the coal was bought, thereby putting it on the same basis as company material. He was asked if the Bell & Zoller Co. (on whose coal demurrage was waived) gave the road commercial business and said, yes. It was understood that the same price was paid for "distress" coal as that paid to mine operators under their mine contracts,

which was \$1.375 for Kentucky coal and \$2.00 for Illinois coal in 1929.

On January 26, 1929, the coal traffic manager of the Illinois Central wrote a letter to Minter & Co., a broker at Memphis, Tenn., in which he said in part:

We have not purchased any coal from you for some time. If you will bill five cars from mines on the Illinois Central and Western Kentucky to yourselves at Chicago next week, we will take it over at the price which you understand we pay.

While several letters in the exhibits disclosed transactions of this kind, Mr. McMahon said it was not a usual practice and, when asked if coal orders were handled in this way in order to hide the transaction from companies having term contracts with the Illinois Central, he said, yes, and added it was similar to a practice followed in lumber purchases.

Mr. Mann was interrogated concerning negotiations with a coal mining company which had originally offered its entire output to the Illinois Central at \$1.10 a ton and with which a contract was later made for six to ten cars a week at the standard price of \$1.375 a ton. He explained that the road did not wish to contract for the entire supply.

Cement Buying

Mr. Bennett was asked why the Illinois Central decided in 1929 to buy the cement used by the contractors and explained that it was possible to buy the cement cheaper this way and also to favor the cement companies that had commercial traffic.

During 1929, the record showed, the Illinois Central learned that the Decatur Malleable Iron Works was routing business against it because it received no orders. The road's purchases amounted to \$37,000 and were already distributed among four concerns giving the Illinois Central traffic. The vice-president of purchases was unwilling to make a further division exactly in conformity with the recommendation of the traffic department, but arranged for the transfer of certain patterns from one of the favored companies in order to give \$4,000 of the annual business to the Decatur company. He said the price of malleable iron was practically standard.

Mr. Bennett's attention was called to instructions he received from the vice-president of purchases in 1929 to see the Pittsburgh Plate Glass Company got "all the road's glass purchases during the first three months" of 1930 "in order to increase our business" with that company. In a subsequent letter, he explained to the vice-president that the purchases for plate glass were previously being made with only one other company besides the Pittsburgh Plate Glass Company and that this was because the other company had quoted lower prices. He was asked if this was done because the Pittsburgh company had threatened to boycott the road but was not sure. He also said that purchases of glass, being practically standard in price, are divided on the basis of traffic.

The Illinois Central purchased its gasoline, kerosene and fuel oil from 27 firms in 1928. The bulk of the orders went to the Standard Oil companies of Louisiana and Indiana and the Sinclair and Shell companies, but included orders for kerosene from the Kendrick Oil Company, which had repeatedly offered five cars of competitive freight for each car of oil purchased. Competitive traffic was received from all firms getting orders for oil, Mr. Bennett said, but the oil was purchased on the basis of competitive bids and the orders were placed at the lowest price or equal.

Over 75 letters were introduced relating to the icing negotiations of the Illinois Central, and witnesses were questioned at length concerning their contents. The

first group of letters related to a situation at Shreveport, La., where three companies had contracts, one company having the contract for all car icing and the other two companies sharing the balance of the business. In 1929, F. R. Mays, then general superintendent, stated to the purchasing department that since "the traffic department advised him that there was no reason why the road should favor" the Louisiana Refrigerating Products Company (one of the two companies supplying team track and miscellaneous ice) he recommended against renewing the contract. This the purchasing agent agreed to do but, through an oversight, that company was again allowed to bid and had its contract renewed along with the others. It was brought out that an understanding had existed between the management of the Illinois Central and the president of the Independent Ice & Coal Storage Co., a fourth company, to give it a share of the miscellaneous icing that year and this was done notwithstanding the contracts with the other companies and, subsequently, the contract for all the icing at Shreveport was awarded to the Independent Ice & Coal Storage Company without competitive bids. The exhibits contained a letter in which a traffic officer of the road said in part:

These people control a heavy tonnage and am confident that the placing of our 1930 ice requirements with them will enable us to materially increase our share of the business, which is practically all competitive.

Both Mr. Mann and Mr. Haywood were questioned particularly regarding the icing contracts in the Chicago terminal. It was brought out in the exhibits that the Consumers' Company had been doing the icing work for the Illinois Central at Chicago for several years and had installed conveying equipment for icing cars there but that in December, 1927, a contract for car icing was made with the Continental Icing Company, shortly following which the mechanical equipment was leased to the Continental Company by the Consumers' Company.

The first contract ran for one year and then was renewed for three years. Mr. Mann explained that several firms quoted at the time and that the icing price was as low as before. Mr. Haywood testified that he became interested in and had recommended the company because of the interest of R. O'Hara, freight traffic manager of Swift & Co., in it and said that he thought a contract with the Continental might influence Swift traffic.

At the close of the inquiry, the examiners introduced a record of negotiations carried on by the Santa Fe for icing its new fruit terminal in Chicago, in which competitive bidding among six concerns in 1927 resulted in a contract with the Consumers' Company for car icing at \$3.50 a ton. The cost of car icing to the Illinois Central under its three-year contract with the Continental was \$4.65 a ton. Mr. Mann expressed the opinion that the better facilities at the Santa Fe terminal would account for the difference of \$1.15 a ton between the two costs.

On June 12, 1929, The Parker-Russell Mining & Manufacturing Co. received a letter from the purchasing agent of the road, in which the latter said:

We have been quoted price of \$45.50 per M, f.o.b. IC East St. Louis, Illinois, and if you can meet this price, we shall be glad to place order with you for 6,000 brick.

Mr. Bennett testified that this was done, several other companies having bid lower than the Parker company and that this company was given the opportunity to meet the low bid on the recommendation of the traffic department to favor a concern that had proved to be a patron of the Illinois Central.

On July 27, 1929, the purchasing department was

asked to favor the McWane Cast Iron Pipe Company at Birmingham, Ala., in view of its friendship, and a short time later the company acknowledged an order for pipe, with information that it was giving the Illinois Central the long haul on certain commercial business.

Mr. Mann explained that all car bidders are permitted to bid on equipment proposals, and, while the contracts are not awarded until after negotiations have been carried on with all bidders, the business is finally awarded at the lowest price.

Equipment Buying

His attention was called to a letter in which the purchasing department responded to a request from the traffic department to favor the Prendergast Lumber Company with purchases and asked the Bettendorf Company to allow the lumber company to bid on the lumber for 200 freight cars which the road had ordered from that firm. The Prendergast Company was awarded the business at a higher price than that quoted by the Lord & Bushnell Co., which then complained to the Illinois Central. Mr. Mann explained that the only request made upon the Bettendorf Company was to allow the Prendergast Company to bid. It was usual to ask the builders to buy lumber for Illinois Central equipment from firms on the Illinois Central, he stated, and the builders had never refused to do so.

A "Fair" Price for Paint

The Illinois Central endeavors to distribute its paint and varnish purchases among various manufacturers who have proven themselves to be good patrons of the road, said Mr. Mann. A record is kept of tonnage, comparing the purchases with and the traffic from each concern during the year. The paint record opened with a letter announcing that the Williams-Hayward Company was using its influence successfully with certain producers of paint ingredients to route traffic over the Illinois Central and asking for more consideration in purchasing, which it received. It also contained the recommendation of the traffic department to increase purchases from the Armstrong Paint & Varnish Co., in view of the Curtis Candy Company's interest in that concern.

Both Mr. Bennett and Mr. Haywood were particularly interrogated about the negotiations with the Certain-teed Products Company of St. Louis as a result of letters referring to an assurance given that the Illinois Central would increase its purchases from \$2,123 in 1928 to \$25,000 in 1929, in order to "hold the traffic to our road." Subsequent letters disclosed that the road had placed orders with this firm amounting to \$25,453. Mr. Bennett said that the Illinois Central does not necessarily buy paint at the lowest price in competitive bidding, except in connection with certain miscellaneous paints, which are purchased in accordance with specifications, and he explained that a standard price is established, after studying quotations received, and that the established price for each class of paint is paid to all firms supplying the grade. He produced the complete record by which the final prices known as the "fair" prices were determined for the period in question, which showed that the standard price usually falls between the low and high quotations.

He was asked why such a large expenditure was made with the Charles R. Long Company for paint, in view of the small amount of tonnage it reported, and, while not certain about the reason at first, he recalled that this company had associated itself with the Carnation Milk Company. Mr. Bennett was also questioned about a letter in which the president of the American Turpentine & Tar Co. and vice-president of the Marine Paint &

Varnish Co. acknowledged an order for certain paint with a statement reading in part as follows:

The tank car we are shipping tomorrow was specifically routed NOGM-GM&N-CR&Q-MC. We are ignoring this routing and giving it to the Illinois Central . . . Recently we got a routing changed from the Goodyear Tire & Rubber Co. which had been ordering every car shipped adversely to your road. Last week we had a tank car for a concern in Cleveland which had been routed NOGN.

Mr. Haywood disclaimed any responsibility for activities of this kind and explained that it simply reflected the competition between different roads for the solicitation of traffic.

Rail Buying

Mr. Bennett testified that all purchases of rail, the price being standard to all roads, are divided on the basis of tonnage from the steel companies, while competitive bidding is followed in making structural steel purchases, except in connection with large transactions, when conferences are held before the orders are placed. His attention was called to the exhibits containing the division of rail orders for the year 1929 among steel firms, recommended by the traffic department:

11,100 tons—Illinois Steel Company
6,900 tons—Inland Steel Company
12,000 tons—Tennessee Coal & Iron Company

The exhibits disclosed that the traffic considered in placing these orders was not confined to steel traffic but also included commodities used by the steel companies. The exhibits also contained a letter to the purchasing department, in which the chief engineer said in part:

You do no doubt recall that the rails from the T.C.I. will give very poor service in our main track as compared with the product of the Illinois Steel and the Inland Steel companies.

For your information, I attach typewritten statement showing comparison of yearly rail failures in our main track since 1922, and draw your attention to the last column of the statement showing the rate of failures on the T.C.I. Co. product for the six years ending 1927 is from four to seven times as great as that from either the other two mills, with the exception only of the year 1926.

In view of the foregoing I am very much averse to placing any considerable tonnage of our 110-lb. rail with the T.C.I. Co. However, I presume traffic conditions justify action that may not be in harmony with the above.

It was brought out that a conference was subsequently held with the Tennessee Coal & Iron Company, when improvements in steel manufacture were considered, following which the chief engineer approved placing the order with the mills in accordance with the original recommendations of the traffic department.

Gravel Purchasing

It was brought out that the Illinois Central divides its orders for ballast in accordance with contracts with gravel firms calling for a definite volume of orders in return for their traffic. The examiners asked questions regarding negotiations with the Illinois Electric Limestone Company during 1929, an off-line company, which led to a contract with this company for some of the gravel which the road had previously obligated itself to accept from other concerns. In a letter to President Downs, the vice-president of operation of the Illinois Central said in part:

The traffic department wants to favor them with some business and the purchasing department agrees this should be done. This will mean a reduction in the amount of ballast the Columbia people expect us to take from them.

Mr. Downs, replying to this letter, said in part:

Considering the large amount of business which all three companies have given us, I feel we are doing what is best for the company in dividing the tonnage three ways.

The action taken resulted in a letter from the Colum-

bia Quarry Company expressing disappointment over its failure to get expected business and explaining with figures that it was doing more for the Illinois Central in the way of long-haul traffic than the road could expect from the Illinois Electric Limestone Company. The purchasing agent said that the arrangement with the ballast company had been made upon the recommendation of the traffic department but that while switching was required to bring the gravel to the line, he understood that the delivered cost of the gravel was as low as that charged by the other companies.

Mr. Bennett's attention was then referred to a request Mr. Downs had made to have the distribution of tonnage developed from the stand-point of the value of traffic in terms of revenue instead of the number of cars, but he said that there were no further conferences regarding this proposal to change the basis of distributing purchases and that the distribution of purchases is still made on a tonnage basis.

Lubricating Oils

It was shown that the Illinois Central spent \$665,000 for lubricants during 1929. Mr. Bennett testified that, in accordance with recommendations of the traffic department, the orders are distributed among a selected list of firms in proportion to the traffic of these firms, but said the oil must be satisfactory and that a distribution is followed which will insure against using more than one firm's oil in a given territory. There is not much variation he said, between the quotations for equipment lubrication, and the lubricant is bought at a fixed price which is paid to all firms for the same grade of oil.

Attention was then called to negotiations with the various oil companies, which led to certain changes in the purchase allotments. The Louisiana Oil Refining Company had received a contract for fuel oil but also wanted to bid on lubricating oil. Vice-president Mann objected on the ground that the "maintenance of the present relationship with the Standard Oil Company of Louisiana was worth more to the road than to try to divide the business further." The refining company wrote to the president, explaining that it was an industry on the line of the road with considerable traffic and desired to bid but was not given an opportunity to do so. Subsequently, the Standard Oil Company of Indiana was prevailed upon to acquiesce in a revision of oil purchases in order to increase the purchases from the Standard Oil Company of Kentucky \$35,000 and later to increase the Shell Company's allotment by \$30,000. Mr. Mann said the changes made were recommended by the traffic department. He testified that the small oil producer did not have a chance to compete for equipment lubrication. He did not think that the divorcing of traffic from the purchasing of lubricating oil would improve the quality of the oil or materially change the price, in view of existing competition.

Journal Packing

The Illinois Central purchased its wiping waste and journal packing from 26 firms in 1928, according to a report which also gave the car load and pounds of less than car load traffic obtained from these firms. The exhibits consisted of a series of letters from the various concerns requesting further orders in return for traffic shipped or promised, or acknowledging orders and notifying the road of certain traffic which these firms owned or claimed to control. One of the firms was the National Sanitary Rag Company, which the traffic department notified the purchasing department had obtained routing power over the rags it sold to the Certain-teed Products Company from which the Illinois

Central had purchased \$35,000 worth of material in 1929. Mr. Haywood was asked if the National Rag Company and similar concerns purchased the right to route the traffic they claimed to control but he did not know.

On May 25, 1929, a letter was sent the Norton Manufacturing Company concerning tie plugs, in which the vice-president of purchases said in part:

The last order was only sent to your competitor after you had declined to accept it, not at a competitive price but at a price above that which we could purchase the tie plugs.

His price was \$1 per cwt. f.o.b. Memphis, as compared with 87 cents f.o.b. Chicago. Subsequently the Norton Company was given another opportunity to bid and quoted the same price. A study brought out the report that on the basis of quality the road was not justified in paying the higher price but the purchasing agent was informed that Norton controlled traffic which he could route against the road, and an order for two cars of tie plugs was placed at the higher price. Mr. Mann explained that the Norton Company was an industry on the Illinois Central and added that it would be necessary to consider the hauling charge before saying that the price was out of line.

Traffic and Lumber Buying

Both Mr. Mann and Mr. Haywood were interrogated over lengthy correspondence about tie purchases. The Ayer & Lord Tie Co. gave \$1,350,000 worth of business to the road in 1927, according to a letter from that company, and increased that traffic approximately \$200,000 in 1928. The first letters disclosed that the freight department had secured several reductions in rates, both inter-state and intra-state, in behalf of its patron, including a reduction of two cents per cwt. for creosote oil from tidewater to the tie plant, a 17-cent reduction on creosote from tidewater to an off-line point and a 14-cent reduction in forest product rates from the tie plant to tidewater. Mr. Haywood contended these reductions were not concessions to the Ayer & Lord Co. for traffic and had no connection with purchases, and he did not know that the tariff adjustments had been made until they were called to his attention by the examiner.

A second group of exhibits covered negotiations with the Jennison-Wright Company over the purchase of switch ties. This company was not located on the Illinois Central but desired to sell the road switch ties which were then on hand at its plants. These ties were to cost the road \$10 per 1,000 bd. ft. more than the road could buy them for on its own lines, but the firm proposed that for every pound of ties purchased by the road it would buy 1½ lb. of its lumber from Illinois Central territory so that the road would get the haul. The lumber and tie agent asked the traffic department for recommendations and, it having developed that the road would get a revenue of \$9,576 for purchasing \$3,800 worth of ties, the order was placed. Mr. Haywood, to whom Mr. Summerhays, then lumber and tie agent, had appealed for recommendations, would not discuss the relative cost of the ties, saying that he left that matter entirely to the discretion of Mr. Summerhays.

Other correspondence relating to the distribution of tie purchases was introduced, showing that the lumber buyer repeatedly relied upon the traffic department's recommendations in distributing tie purchases. A typical letter received from one of the lumber companies read in part as follows:

During the past month we received an order for one car from your line . . . Since we received this order we have discontinued short hauling and, in addition, have during the past month routed about 15 or 20 competitive cars over your line.

Mr. Mann was asked if his lumber buyer ever "peddled" lumber orders for traffic and said he had never heard of this being done but, upon further questioning, said he would approve the distribution of lumber orders in return for traffic.

Electric Crossing Gate for Automatic Operation

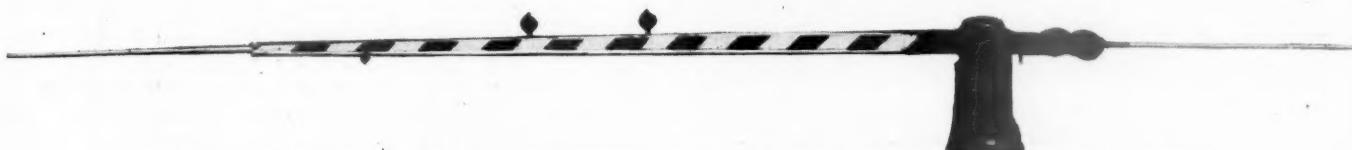
AN electric crossing gate, designed especially for operation under automatic control by the approach of a train, has been developed by the Buda Company, Harvey, Ill. This new design, known as the Model 51 automatic crossing gate, is a refinement of the Buda electric gate mechanism for non-automatic control.

Certain changes have been made in the design of the arm in order to provide against breakage. The arms lower gently, the mechanism being so designed that if an arm should come down on a vehicle the power to that arm is alternately reversed and applied, allowing no harmful pressure to be exerted. Upon removal of the obstruction the power is automatically applied to complete the cycle, and is then automatically cut off.

Turn-buckled impact cables paralleling each side of the arm serve not only to truss the arm, but also to absorb the starting impact as well as the impact that may be caused by a vehicle striking the gate. In the latter case the arm is free to rotate 90 deg. horizontally in either direction. Upon the withdrawal of the vehicle after such a horizontal deflection the gate is returned, at a pre-determined rate of speed and without any slapping action, to the correct position. This controlled return motion is effected through the agency of an oil dash-pot not unlike a door check. Of interest is the fact that horizontal rotation cannot be effected by high winds, since the two 1,200-lb compression springs used with the dash-pot are so arranged that an impact is required to start a horizontal deflection. Similarly, the gate is not affected by wind when in the upright position.

If the arm is held down when the power is applied to raise the gate, no harm is done to the driving mechanism as the power to that arm is then shut off automatically, but is restored automatically when the arm is released. The design of the mechanism contemplates the possibility of sleet forming on the arm, as the

Rotating Head and Low Power Requirements Make This Gate Suitable for Automatic Operation



manufacturer states that the mechanism will operate with a maximum ice load.

The arm can be furnished in various lengths, as desired, depending upon the width and angle of the highway or street which it is to protect; the gate shown in the illustration has a 33-ft. arm. An auxiliary arm for protecting a sidewalk can be applied to the pedestal without disturbing the mechanism. This arm, when down in the barrier position, is free to rotate horizontally, being alined by two leaf springs.

Power requirements for the operation of this new gate were materially reduced, due partly to the use of a lighter, more efficient form of construction, partly to proper counter-balancing, and partly to the use of ball or roller bearings throughout. The motor is rated at $\frac{1}{6}$ h.p., for operation on 10 volts d-c. Three choices of operating speed are available, 8, 12, and 15 seconds. The mechanism can be supplied for operation at any voltage up to 660 volts d-c. or 600 volts a-c. The control relay is housed in the mechanism pedestal and is controlled automatically through the agency of the track circuit, track or trolley contactor or other controlling device.

The gate arm is equipped with two red alternately flashing lights of the full-reflection type, each being lighted by a 10-volt, 10-watt lamp. In addition, a 10-volt, 10-watt beam light is mounted to illuminate the face of the arm so as to make it visible to vehicle drivers, when the arm is in the barrier position.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 18 amounted to 931,085 cars, which reflected a continuation of the seasonal decline and also was 254,479 cars less than the loading for the corresponding week of last year. This is a greater spread than has heretofore been reported this year. It was also a reduction of 232,050 cars as compared with 1928. All commodity classifications and all districts showed reductions as compared with both years. The

decrease in miscellaneous loading as compared with last year was 110,953 cars and that in merchandising loading was 33,624 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 18, 1930.

Districts	1930	1929	1928
Eastern	200,534	260,841	260,056
Allegheny	180,165	234,517	233,660
Pocahontas	54,946	66,898	62,981
Southern	135,230	164,271	160,289
Northwestern	129,997	177,150	171,470
Central Western	153,698	184,062	179,403
Southwestern	76,515	97,825	95,276
Total Western Districts	260,210	459,037	446,149
Total All Roads	931,085	1,185,564	1,163,135
Commodities			
Grain and Grain Products.....	38,011	46,369	51,838
Live Stock	32,085	38,520	39,692
Coal	159,727	200,560	203,025
Coke	8,490	12,258	10,418
Forest Products	39,032	66,439	65,092
Ore	39,517	62,618	59,504
Merchandise, L. C. L.	238,185	271,809	270,308
Miscellaneous	276,038	486,991	463,258
October 18	931,085	1,185,564	1,163,135
October 11	954,874	1,179,540	1,190,741
October 4	972,492	1,179,947	1,187,032
September 27	950,381	1,203,139	1,196,965
September 20	952,512	1,167,395	1,144,131

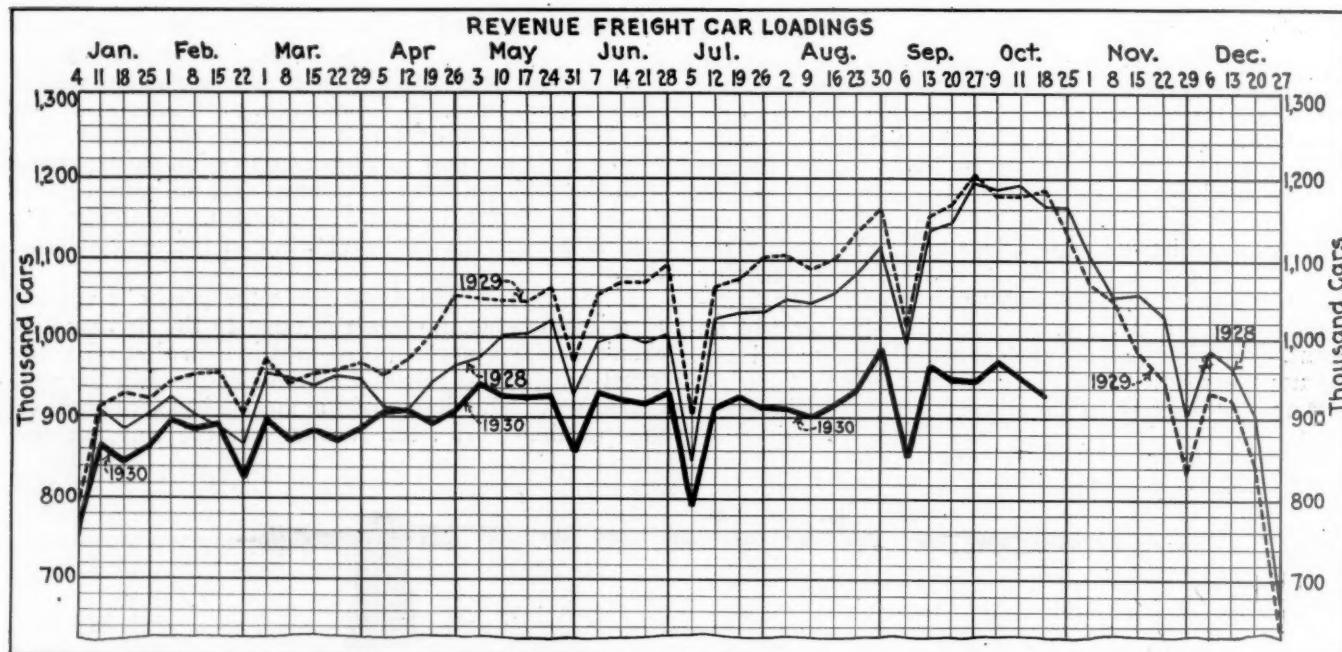
Cumulative total, 42 weeks.....38,017,099 43,465,077 41,765,670

The freight car surplus for the period ended October 15 averaged 396,291 cars, an increase of 6,982 cars as compared with the preceding week. The total included 214,933 box cars, 132,863 coal cars, 22,040 stock cars, and 7,442 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended October 18 totaled 65,157 cars, a decrease from the previous week of 6,122 cars and a decrease from the same week last year of 17,470 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
October 18, 1930.....	65,157	32,302
October 11, 1930.....	71,279	33,561
October 4, 1930.....	70,897	31,952
October 19, 1929.....	82,627	41,337
Cumulative Totals for Canada		
October 18, 1930.....	2,583,318	1,407,402
October 19, 1929.....	2,899,866	1,736,662
October 20, 1928.....	2,903,358	1,652,764





The Report on Camp-Car Outfits Was a Feature of the Convention

Bridge Men Meet In Louisville

Convention considered such timely topics as modernization of station buildings, masonry failures, power tools, welding of structural steel, and camp cars

AN unusually active discussion characterized the 40th annual convention of the American Railway Bridge and Building Association at Louisville, Ky., on October 21-23. The program, which attracted approximately 150 members of the organization, included reports of the committees on: The relative advantages and costs of precast concrete walls and monolithic walls; masonry failures—their causes and remedies; the programming of bridge, building and water-service work; camp cars and their equipment for bridge and building crews; the inspection and maintenance of water tanks and their appurtenances; the modernizing of station buildings and the maintenance of turntable and draw-bridge machinery. In addition a session on Tuesday evening was devoted to the consideration of the welding of structural steel with addresses by H. M. Priest, assistant engineer, American Bridge Company, New York and W. R. Roof, bridge engineer, Chicago Great Western, Chicago.

All sessions of the convention were presided over by J. S. Huntoon, president of the association and assistant bridge engineer of the Michigan Central. The report of C. A. Lichy, secretary-treasurer, showed the total membership of the association to be 714.

At the closing session of the convention the following officers were elected for the ensuing year: President, C. S. Heritage, bridge engineer, K. C. S., Kansas City, Mo.; first vice-president, A. I. Gauthier, assistant division engineer, B. & M., Concord, N. H.; second vice-president, H. I. Benjamin, assistant engineer bridges, S.P., San Francisco, Cal.; third vice-president, W. T. Krausch, engineer buildings, C. B. & Q., Chicago; fourth vice-president, T. H. Strate, engineer track elevation, C. M. St. P. & P., Chicago. Directors: A. B. Scowden, general bridge inspector, B. & O., Cincinnati, Ohio; W. A. Batey, general bridge inspector, U.P., Omaha, Neb.; and L. C. Smith, supervisor bridges and buildings, I.H.B., Calumet City, Ill. C. A. Lichy, inspector, pur-

chasing department, C. & N. W., Chicago, was re-elected secretary-treasurer for the 21st consecutive year. Accepting the recommendation of its officers-elect, the association voted to hold its next annual convention in Toronto, Ont., on October 20-22. Seven reports, addresses and papers presented at the convention are abstracted below; four others will appear in the next issue.

W. R. Cole Discusses Railway Problems

W. R. Cole, president of the Louisville & Nashville, addressed the convention on Tuesday morning on the problems that are now confronting the railways. "These roads," he said, "are now facing problems of a more varied character than ever before. The transportation act of 1920 was heralded as marking the beginning of a new day because for the first time it was recognized that the railways are entitled to a fair return, and the Interstate Commerce Commission was instructed to so regulate rates that the roads would be enabled to earn this re-



Miscellaneous Service Truck Used by Bridge and Building Forces

turn." Mr. Cole then showed how far the roads had failed to attain this objective, and deplored the fact that the commission, in ordering reductions in rates, had not given sufficient attention to the conditions that are actually confronting the railways. He also deprecated the importance that is being attached to valuation as a basis for rate making, while ignoring the increasing importance of other influences, such as, for instance, the competition of other transportation agencies. Mr. Cole then referred at some length to the subsidized competition which now confronts the railways, especially on the highways and waterways. He characterized the waterway competition as especially unfair because the government is not only providing the channel at public expense, but is itself engaged in transportation on these waterways in competition with the railways and is paying the deficit out of the public treasury. "The present barge rates are possible," Mr. Cole said, "only by reason of the backing of the United States Treasury."

Concrete Crib Walls and Monolithic Walls Compared

T. H. Strate, engineer of grade separation, Chicago, Milwaukee, St. Paul & Pacific, Chicago, presented a report of the Committee on the Relative Advantages and Costs of Precast Concrete Crib Walls and Monolithic Walls. The committee's report consisted of a statement of 17 advantages of crib walls over monolithic walls and a comparison of the costs of the two types of construction. The advantages of the precast concrete cribbing units are stated below:

1. Lower cost of installation.
2. Greater speed of erection.
3. Immediate use on completion without waiting for curing as is necessary with concrete poured in place.
4. High quality of concrete scientifically manufactured under strict control methods, is possible only in a well-organized concrete-products plant where materials and water are properly weighted or proportioned and where proper curing is assured.
5. Can be placed on foundation soils which would require a pile or caisson sub-foundation if a heavy mass wall were constructed.
6. Slight settlement of foundation soil does not injure a cribbing wall when properly designed and erected.
7. Standardized precast units may be carried in stock, in which event their availability in an emergency is invaluable where the time element is a feature.
8. No special equipment is required and erection may be done by unskilled labor.
9. Ease of construction, removal and relocation without loss, allowable increase of height on account of future widening of banks, raise in grades, etc.
10. Provides perfect drainage without the use of tile drains and necessary sewer connections.
11. Precast cribbing has some advantages in congested terminal districts, or where the right of way is restricted, where, in construction of solid walls, encroachment on adjacent track space or private ground would be necessary.
12. Can be used easily and to great advantage when two tracks or roadways are operated on different levels and on close centers.
13. Replacement of wooden cribbing can be handled most advantageously by use of precast concrete cribbing, as one section or cell can be placed at a time with a minimum amount of shoring. In doing this the material excavated for an adjoining cell may be used as back-fill for the one just erected.
14. Minimum amount of excavation for foundation. Under ordinary conditions the removal of the top earth to a depth of one foot is sufficient for cribbing, as compared with three to four feet or more for a solid wall. Of course, each job presents its own problem in this respect and a general specification cannot be drawn to fit all cases.
15. Can be used to good advantage to retain the fill at switch stands and signal foundations where a solid wall would require deep footings.
16. Can be used for wing walls of bridge abutments along highways, especially where it is likely that the abutments will

have to be widened at a later time to accommodate additional tracks.

17. Where precast concrete cribbing may be used the cost is as a rule, from 25 to 40 per cent less than for a monolithic wall to serve the same purpose.

The foregoing in a general way outlines information gathered from various sources relative to precast cribbing. In very few cases is the decision to use cribbing based entirely on relative costs. It is true that an exact comparison cannot be made between the two types of walls, unless a design for each type for the same location is made so that the decision to use cribbing in place of a solid wall is generally based on the conditions under which the work has to be done. The avoidance of pile foundations, when required for solid walls, is one of the great advantages of crib construction.

Conclusion

The committee is making no suggestion as to type of such walls, that being left to the discretion of the user. It is the recommendation, however, that the use of precast cribbing in retaining walls up to a height of 12 ft. be given serious consideration where such structures are necessary. Above this height the decision is left to the judgment of the interested individual. It is not the intention of the committee to suggest that the mass wall be supplanted entirely by cribbing, but there is at this time sufficient evidence to warrant the further consideration and use of the latter in railroad construction.

Discussion

The discussion of this report centered largely around two questions: The limitations of the use of crib construction and its economy as compared with monolithic walls. In discussing the first phase of the subject, L. D. Hadwin (C. M. St. P. & P.) emphasized the use of first class concrete in crib construction because of the small units involved. He contended that concrete for such purposes must therefore be made to very rigid specifications, for it is difficult and expensive to repair a crib wall after one or more units fail. Supporting the implication of the committee that the height of crib walls be limited to 12 ft., Chairman Strate stated that at least one failure of a wall 15 ft. in height has come to the attention of the committee. W. R. Roof (C. G. W.) replied that on his road walls as high as 18 ft. have been in service for periods up to 5 years without signs of failure.

With reference to the economy of crib construction, J. J. Davis (E. J. & E.) cited an instance where a crib wall built to protect a hopper track between two main tracks at a coaling station cost 60 per cent of the estimated figure for a solid wall. He stated further that the closed face type of wall cost 10 per cent more than the open face type. It was evident from the discussion that many of the railways are finding numerous opportunities to effect economies through the use of crib walls for permanent as well as temporary construction of moderate heights.

Masonry Failures

The failure of masonry structures, the cause of failures and their remedies was the subject assigned to a committee, of which A. B. Scowden, general bridge and building inspector, Baltimore & Ohio, Cincinnati, Ohio, was chairman. The subject so assigned was intended to cover both stone masonry and concrete, but owing to the fact that concrete structures had been the subject of a committee report presented in 1926, Mr. Scowden's committee chose to devote its attention primarily to stone masonry structures, confining its comments on concrete masonry to a synopsis of the report presented in 1926. A brief abstract of the committee's report follows:

Bridge piers and abutments represent the most important railway structures built of stone masonry and the ailments to which they are subjected can also be found in most other types of structures. In tabulating these ailments and their symptoms below, it will be noted that similar symptoms may denote somewhat different causes. Also, the conditions found may indi-

cate two or more different causes, showing the structure to be suffering from a complication of ailments.

Ailments

1—General overloading of foundation.

2—Partial overloading of foundation.

3—Reduction of the foundation area.

4—Horizontal movement on foundation.

5—Moving foundation.

6—Reduction in bond between stones.

7—Overloading of individual stones.

8—Surface disintegration due to atmospheric conditions and water.

A slow, gradual and fairly uniform surface disintegration is not a serious matter, as the heavy body of masonry has lost very little of its usefulness by the small loss of stone on the face. When the slow crumbling of a stone develops into a breaking away of larger spalls, its future destruction becomes rapid, and it is none too soon to remedy the condition. Before applying protection, all loose and soft parts of the old stone must be removed. The placing of a thin concrete facing, bringing it out to the face of the old masonry, is usually not effective, but the patching of scattered stones with concrete 12 to 18 in. deep will ordinarily prove of value, at least as a temporary expedient.

Where larger areas or the complete surface of the masonry require protection, this is accomplished either by means of a heavy concrete facing, using forms, or by a lighter cement mortar surface, applied with an air gun and without forms (gunite).

Concrete facing must be provided with a suitable and effective foundation. Where the deterioration of the masonry has not progressed deeply below the original surface, concrete of 6 in. to 12 in. thickness, well anchored, has often proved effective.

Gunite facing must have a stone or concrete footing extending above the water line. The masonry surface must be reasonably dry and free from water seepage, when the gunite is applied.

Sealing coats for concrete and gunite usually consist of minute particles of iron, which through oxidation fill up any surface pores. They are available under various trade names.

An overloaded retaining wall will usually fail by tilting or overturning and less frequently by sliding on the foundation or at some joint between the courses. The permanent strengthening of a weak wall can be done by concrete facing or buttresses on the front, if sufficient space is available. If this is not the case counterforts in the rear of the wall can be used, although at higher cost. Temporary strengthening is often done by lead ties, consisting of rods, carried from the face of the wall to anchors, such as walls or piles, located well back in the embankment. Such construction is also often made reasonably permanent in character.

Broken covers of stone boxes can be jacked up and rails inserted, sidewalls can be repaired with concrete, and the life of the structure extended. In many cases, however, the cost of the repair work will prove too high for the benefits obtained and in such cases replacement with pipe culverts is more economical in the long run.

Symptoms

Vertical settlement. "Pumping" at the ground line.

Sagging of horizontal joints in part. Opening of vertical joints at definite location cracks in stones, where the vertical joints are opened. Tilting. Crowding of steel against anchor bolts. Excessive offsets on expansion rollers. Shearing of anchor bolts. Reduction in surface batter. Crowding of back walls against steel.

Underwashings of foundations to be determined by soundings or in extreme cases by means of a diver. Symptoms developing in exposed surfaces similar to 1 or 2.

Sliding on foundations without tilting.

Loose mortar joints. Absence of mortar in joints. In advanced cases, vertical cracks due to uneven bearing. Local bulging out of parts of surface.

Split or broken stones, usually directly under the shoes, or in the course below the bearing stones, gradually extending to the lower courses.

"Weathering." Spalling, opening up of laminations, causing the stone to "slice." Breaking out of parts of stones.

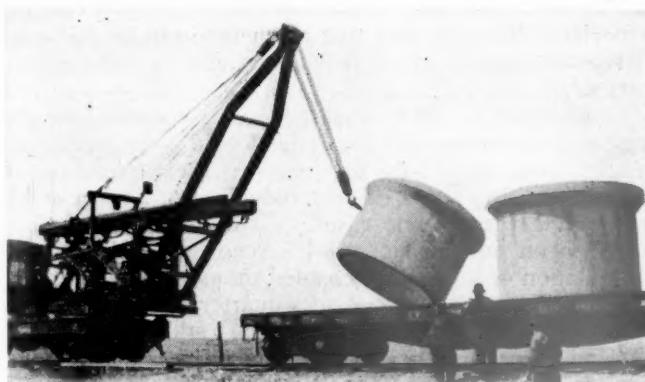
Discussion

In discussing this report a number of men questioned the advisability of attempting to repair old piers and abutments because of uncertainty as to the materials inside or under them. In the course of the discussion, reference was made to several structures built nearly a century ago for the traffic of that day which are carrying modern loadings with little or no alteration or strengthening. Among the structures referred to were the Baltimore & Ohio viaduct at Relay, Md., built in 1850, the Starrucca viaduct built by the Erie near Salamanca, N. Y., in 1848, and several arch spans on the C. & N. W. near Shopiere, Wis., built about 1860.

Programming Bridge, Building and Water Service Work

A report on the programming of work carried on under the direction of the bridge and building and water service departments was prepared by a committee headed by E. C. Neville, supervisor bridges and buildings, Canadian National, Toronto, Ont. The report consisted of a general resumé of the advantages of conducting the work under a carefully prepared program and was prefaced by a statement pointing out the importance of the work in this department. This statement and the committee's conclusions are presented in brief below:

When it is considered that the railways of Canada and the



A Combination Pile Driver and Derrick Car Handling Concrete Pipe

United States have \$1,680,000,000 invested in buildings, \$2,500,000,000 in bridges, and \$460,000,000 in water stations, some idea is obtained of the responsibilities of the officers who are in charge of these facilities. As a further indication of the magnitude of these railway facilities, \$92,000,000 is spent annually for the maintenance of buildings and \$90,000,000 for their enlargement and improvement and for new buildings; bridge maintenance costs in excess of \$37,500,000 annually, and \$47,000,000 is spent every year for the maintenance and operation of water stations, in addition to more than \$7,000,000 for their enlargement and improvement and for new stations.

It is evident, therefore, that the supervisory officers in these departments can do much toward effecting economies in their work by proper planning and by close adherence to these plans in the execution of the work which is assigned to them.

Substantial reductions have been made during the past few years by the careful conservation of materials and labor, as well as through the use of labor-saving devices, and supervisory officers are keenly appreciative of their added responsibilities in keeping down maintenance costs in order to meet in some measure the increasing cost of railroad operation, but as a means of a further saving we recommend for most serious consideration the programming of bridge, building and water service maintenance.

From replies received to a questionnaire sent out to about 50 railroads it would seem that the majority of them have some method of listing their larger maintenance jobs in the order of their importance. Some program only bridge work, others only

building work, while a few program painting only, and very few make any attempt to program water service work. One road in particular programs all of the maintenance work on a man-hour basis and schedules it to the nearest hundredth part of a day.

As indicated by replies to the questionnaire, the advantages of programming over other methods of doing maintenance work, are as follows:

1. Costly equipment can be used to the best advantage with less idle time.
2. The purchasing and stores departments are enabled to provide material and make deliveries as required, without having to resort to unsatisfactory rush methods.
3. It tends toward closer estimating and better inspection.
4. It gives a better comparison of the worth of various forces, as a goal has been set for them to strive for, and tends to increase the quality and amount of work accomplished.
5. It avoids cross hauling of outfits, thus saving time.
6. It gives foremen an opportunity to plan and study their work in advance.
7. It has a tendency to stabilize employment and develop the morale of the forces.
8. It keeps officers in closer touch with the work and affords better control of expenditures.

While there are numerous other advantages, these should be sufficient to warrant the practice.

Discussion

While it was very evident that those present appreciated the economy that can be effected in the conduct of work by programming, it was also evident that many of them felt that rigid adherence to a program was impractical. H. C. Munson (C.M.St.P.&P.) combated this idea with the statement that last year one of the crews on his division finished its season's program on the day scheduled and another gang only one day late. From his experience he contended that a schedule can be followed if the supervisory officer will determine to make a success of it.

C. M. Burpee (D&H.) stated that a secondary advantage of programming is the reduction in store stock that results from an orderly program for the assembling of materials, citing a 38 per cent reduction in lumber stock in a single year as one result of the inauguration of a program on one division of his road. In addition, the formulation of a program enabled the purchasing department to buy much material on a quarterly rather than an annual basis. T. E. O'Brien (D&H.) added that on his division it had been possible to reduce the material stock from a normal average of \$18,000 to \$4,000 as a result of a program. He stated further that he had completed 92 per cent of his bridge program last year.

The Welding of Structural Steel

In a program devoted to the welding of structural steel for bridge purposes, H. M. Priest, assistant engineer, American Bridge Company, New York, discussed the degree of uniformity that one can expect from various shops over the country. Mr. Priest described an investigation that is now being made by a committee of the American Welding Society in some 40 shops throughout the country, to determine the relative efficiency and uniformity of the work done at these various locations. To date, this committee has collected samples of the work done by 44 welders in shops located from the Atlantic seaboard as far west as Omaha, Neb. The average of these tests show a strength of weld of 8,000 lb. above the figure set forth in the specifications. Furthermore, the work of 28 of these welders and 65 per cent of the tests made to date are within 5 per cent of this average, while the maximum variation is less than 10 per cent. Mr. Priest presented these figures to show the degree of uniformity that can be expected from welding.

Mr. Priest was followed on the program by W. R. Roof, bridge engineer of the Chicago Great Western,

who read a paper in which he explained that the purchase of new power by the Chicago Great Western resulted in the transfer of Santa Fe type (2-10-2) locomotives to the Iowa division where their use would have resulted in high flange stresses to the stringers and floor beams of the Des Moines river bridge, a structure consisting of four skew single-track through truss spans, 180 ft. long. These floor members were of the usual angle-flange and web type without flange plates. The computed stress in the stringer flanges under the heavier loading, with allowance for impact, was 24,100 lb. per sq. in. and in the flanges of the floor beams, 27,100 lb. per sq. in. By adding cover plates to the top and bottom flanges of both stringers and floor beams, it was possible to reduce the flange stresses to 16,800 and 17,180 lb. per sq. in., respectively.

In order to eliminate up-hand welding, the top reinforcing plates were made $3\frac{1}{2}$ in. narrower and the bottom reinforcing plates $2\frac{1}{2}$ in. wider than the flange width formed by the original flange angles and in order to compensate for this difference in width and obtain balanced flange sections, the top plates were ordered $\frac{1}{2}$ in. thick and the bottom plates $\frac{3}{8}$ in. thick. The new cover plates were welded in place under contract by three welders with welding machines of the motor-driven type delivering 30 amp. at 85 volts d.c. The welders were assisted by three railway bridge gangs in placing the new plates, cleaning the steel, handling scaffolding, etc. The total cost of the work was \$6,489.70, of which \$4,854.19 represents the cost chargeable directly to welding. As a total of 7,212 lin. ft. of $\frac{3}{8}$ -in. bead arc welding was required, the average cost was 67.3 cents per lin. ft.

In reply to questions, Mr. Roof stated that welding the reinforcement on this structure cost one-third what it would have cost to have attached it by riveting. He added that the work was done with no interference with traffic other than a slow order to protect the workmen who were employed to shift ties out of the way of the welders. Mr. Roof also stated that there had been no indication whatever of failure in the three years that have intervened since similar work had been done on the bridge across the Missouri river at Leavenworth, Kan.

The Use of Power Tools in Bridge and Building Work

Much valuable information on the use of power tools was presented in the report of a committee of which R. D. Ransom, supervisor of bridges and buildings, Chicago & North Western, Sioux City, Iowa, was chairman. In addition to an outline of the particular problems imposed in the use of labor-saving equipment in bridge and building work, the committee offered some definite recommendations with respect to equipment definitely applicable to the work of the department. A brief synopsis of the report follows:

There are many reasons why the tasks embraced in bridge and building work were not readily reduced to mechanical processes. Foremost among these are the diversity of the tasks and the inherent difficulties of effecting the division of labor which characterized the industrial revolution of the nineteenth century. So long as one individual was required to perform many different tasks from hour to hour it was impracticable to provide him with a power tool for each task. But there is an even more important reason for the delay in the introduction of labor-saving equipment in these fields. The portable power units had to wait two important developments; the widespread distribution of electricity through the agency of the public service companies and the perfection of the internal combustion engine, whereby direct mechanical power, compressed air or electricity may be supplied economically by prime movers of relatively small size.

The machine used for driving piling should, if possible, be

capable of doing other allied work such as performing the duties of a derrick. It should be equipped with an air pump for the operation of air tools for boring and sawing and possibly other work, so that it may be kept busy throughout the year and not left to stand idle a large portion of the time.

It has been fairly well determined that a steam hammer will drive approximately 50 per cent more piling in a given time than a drop hammer and the damage to the piling will be less. The steam hammer should be equipped with false or telescoping leaders, in the case of fixed leaders, so that piling may be driven to within a foot or two of cut-off without the use of a follower, especially when driving pile piers.

Some railroad companies find the combination crane and pile driver quite suitable for their work. It consists of a regular locomotive crane and boom with a truss platform with folding leaders. This crane can readily be converted into a pile driver by removing the boom and attaching a pile driving truss and leaders containing a steam hammer. Piles can then be driven 22 ft. ahead of the forward wheels and 30 ft. at right angles from the center of the track. The leaders may be lowered or raised in a short time so that it can be used where any other type of track pile driver can be used with a few exceptions such as for driving 60 to 85 ft. piling. There is very little difference in the cost of the crane and boom with the pile driving attachment and the self-propelled track pile driver.

The following equipment has proved very satisfactory in bridge and building work:

Steam-operated self-propelled cranes with 40-ft. booms and 20 to 30-ft. removable inserts to make booms 60 to 70 ft. long when needed. The capacity of these cranes range from 25 to

used to advantage for operating cross-cut and rip saws and boring machines and for many other operations such as tightening and removing nuts from bolts, and also for furnishing electric light during night work.

A home-made portable saw table has proved very satisfactory where there is considerable sawing to do.

Portable gas-electric outfits are used for repairing and strengthening bridge members in the field. This method of repairing is in its infancy although we believe it has great possibilities. Work of this kind should be done by thoroughly experienced welders and in no case by amateurs.

The oxygen-acetylene cutting torch is used for cutting all kinds of steel and iron and is especially useful for removing steel and iron structures that are to be scrapped.

Pneumatic tools include a large part of the power tool equipment that is used by most railroads. Among these is the combination pneumatic riveting hammer, rivet buster and backing out punch.

Miscellaneous electric-driven tools and machines operating on either 220 or 110 volts are being used to a considerable extent by several railroads at the present time.

Portable gas-driven trench pumps are used to remove water from excavations up to 15 ft. in depth.

A wood-working machine with cut-off, rip, dado and band saw, jointer, mortiser, and tenoner, and tongue and groover accessories, is a valuable machine for building work.

The cement gun is a unit of equipment that is valuable for making repairs to cracked masonry of either stone or concrete and for repairing disintegrated concrete.

The paint spray machine is also a labor saver. We believe the paint machine is better than the hand brush, especially on steel bridges, although the spray gun will use about 20 per cent more paint, this being more than offset by the saving in labor.

Discussion

W. A. Batey, (U.P.) opened the discussion of this report with the statement that a road pays for power tools whether it buys them or not. He added that the programming of work enables much equipment of this character to be concentrated in specialized gangs and then used for the maximum period. Such equipment, he added, not only reduces costs but also shortens the period of interference with traffic.

Arizona Train Limit Law Repeal Hearing Continued

TOTAL annual savings to the Atchison, Topeka & Santa Fe by repeal of the Arizona train limit law, allowing it to operate freight trains of more than 70 cars and passenger trains of more than 14 cars in that state would approximate \$665,000, A. L. Conrad, assistant general auditor of the railroad, told the referee in chancery, Joseph E. Morrison, in a continuation of the hearings on the Arizona law in the district court at San Francisco, Cal., on October 17.

He showed that for 1927, 1928 and 1929 the average annual freight traffic of the Santa Fe in Arizona was 1,104,996,177 revenue ton-miles, of which intrastate traffic was 37,400,353 revenue ton-miles or 3.38 per cent, and interstate traffic was 1,067,595,823 revenue ton-miles or 96.62 per cent. Some of this interstate traffic either originated or terminated in Arizona, but of the total revenue ton-mileage in Arizona, 793,939,656 ton-miles, or 71.85 per cent represented "bridge" traffic. In 1929 alone, Santa Fe passenger miles in Arizona were 156,286,407, of which 7,758,525 passenger miles or 4.96 per cent represented intrastate traffic and 148,527,882 passenger miles, or 95.04 per cent represented interstate traffic. Bridge passenger traffic in 1929 amounted to 82.54 per cent of the total passenger miles in Arizona.

Mr. Conrad introduced a statement based on a study



Portable Power Saws Prove Useful

60 tons at minimum radius so that they can be used for handling heavy loads when erecting steel and other heavy work.

Combination locomotive-crane derrick cars are available which are designed for the placing of long heavy girders and which can lift 100 tons at an 85-ft. radius and set a load 20 ft. off the center line of track. A 150-ton locomotive crane furnishes power for a seven-drum hoisting engine on a derrick car, propels the car, and serves as anchorage counterweight.

Where only a small crane is required for light work, it has been found that the self-propelled type commonly used in laying rail in track, is very efficient in handling such bridge material as timber falsework, the removing of old stone masonry and other similar work.

There are many other types of derricks, of which the stiff leg derrick is probably most commonly used.

The many hoists now in use for various work demonstrate their usefulness. The larger ones are generally operated by steam while those of smaller capacity are often powered by gasoline, enabling them to be moved more readily from one job to another.

Almost every one in the engineering or bridge and building departments is familiar with the various types of concrete mixers.

A crew with a motor car and a roller bearing push car will be able to unload the material at the site of the work instead of at a considerable distance, as is often the case when unloading from trains.

Motor trucks may become indispensable in terminals, not only to the bridge and building department, but also to other departments. They are especially adaptable for use about the headquarters or within a radius of 30 to 50 miles.

Portable electric generators and air compressors can be

made during February, March September and October, 1927, on five train districts between Barstow, Cal., and Belen, N. M. Train dispatchers of the divisions involved listed all through trains operated over their districts in those months. Dispatchers then reconstructed those actual trains into assumed or hypothetical trains, with a maximum tonnage of 4,000 tons and a maximum length of 125 cars. The following table of possible savings between Belen and Barstow for four months, Mr. Conrad said, assumes not only the abrogation of the Train Limit law, but also of the Santa Fe agreement with its employees wherein, outside of certain specified districts, the tonnage of double header trains is restricted to 2900:

	Actual	Assumed	Saving
Locomotive repairs, depreciation and retirements	\$504,119.11	\$444,377.40	\$ 59,741.71
Wages, enginemen	235,172.92	198,811.69	36,361.23
Wages, trainmen	279,161.03	216,958.88	62,202.15
Cost of fuel	698,593.67	612,541.57	86,052.10
Other locomotive expenses—water, lubricants, supplies and round house expenses	145,491.84	124,301.45	21,190.39
Total, selected expenses	1,862,538.57	1,596,990.99	265,547.58
Total saving equated to an annual basis		664,738.33	

Joseph H. Dyer, vice-president in charge of operation of the Southern Pacific, Pacific lines, on October 20, compared the operations of that road across Arizona, on the Tucson division, and in Nevada and Utah, on the Salt Lake division, where a similarity exists in physical conditions and traffic. On the Tucson division freight trains are limited to 70 cars and passenger trains to 14 cars, while on the Salt Lake division freight trains are operated with from 125 to 135 loaded cars, and passenger trains with as many as 18 cars. Mr. Dyer stated that the Arizona law constitutes a hindrance to efficient and economical operation, and that if the law were abolished immediate economies in operation could be made with perfect safety on the Tucson division.

Four witnesses from roads other than the two involved in the litigation testified that it is standard practice outside of Arizona to operate trains of greater length than prescribed in the law of that state. F. J. Gavin, general manager of the Great Northern lines east of Williston, N. D., stated that during a representative 24-hour period in October, 1929, on the main line of the Great Northern 186 through freight and ore trains were operated. Of these 32 were under 71 cars; 73 were from 71 to 89 cars; 46 were from 90 to 109 cars; 12 were from 110 to 129 cars; 13 were from 130 to 169 cars; and 10 had over 170 cars.

On the Northern Pacific during the first 25 days of September, 1930, 2,151 freight trains were handled over one district eastbound, with an average of 65 cars per train, B. O. Johnson, assistant to the operating vice-president of that road, said in his testimony. During the same period the westbound movement consisted of 2,070 cars, with an average of 67 cars per train. On September 14, a Sunday, 72 trains, including locals, were moved eastbound with an average of 72 cars per train. Eleven of the trains had from 71 to 80 cars; 16 had from 81 to 90 cars, and 10 had from 91 to 100 cars. Of the 67 through freight trains, 54 per cent exceeded 70 cars in length. On September 17, of the 83 through freights moved eastbound 44 per cent exceeded 70 cars in length. The heaviest average train loading westbound in this period occurred on Sunday, September 21, when 66 trains were run with an average of 72 cars each. The percentage of trains over 70 cars in length among the 63 through trains, was 60 per cent.

Mr. Johnson also presented figures prepared in 1928 for use in combating train length limitation legislation in Minnesota. A table showing the length of trains operated by all railroads in Minnesota in four different years was as follows:

Under	50 cars	Number of Trains			
		Sept. 1910	Sept. 1915	Sept. 1920	Sept. 1927
50-59 "	9,719	8,941	9,964	7,758	
60-69 "	1,039	1,619	2,011	1,742	
70-79 "	776	1,079	1,147	1,500	
80-89 "	705	629	1,138	1,658	
90-99 "	335	557	850	925	
100-109 "	403	268	287	742	
110-119 "	1	269	269	336	
120-129 "			100	153	167
130-139 "			304	127	141
140-149 "				98	94
150-159 "				204	31
160-169 "				310	46
170-179 "					94
					288
		12,978	13,766	16,558	15,522

N. S. Menaugh, superintendent of freight transportation of the Eastern region of the Pennsylvania, presented a tabulation showing the trains of more than 70 cars dispatched from various terminals on the Pennsylvania on October 17, 1929. The number of trains, the average cars per train and the average tonnage, both eastbound and westbound were as follows:

Trains	Average Cars Per Train		Average Tonnage	
	E.B.	W.B.	E.B.	W.B.
Fort Wayne	14	9	70.1	84.6
Crestline	16	11	72.3	77.8
Canton	17	19	79.6	71.9
Pittsburgh	20	25	89.5	66.4
Altoona	41	42	88.3	90.7
Harrisburg	42	31	67.9	100.9
			E.B.	W.B.
			2663	2516
			2959	2739
			2469	2870
			4381	3212
			5622	2694
			4017	4338

Mr. Menaugh also showed the maximum train at each terminal on October 17, 1929, as follows, both eastbound and westbound:

Terminals	Maximum Number of Cars		Maximum Tonnage	
	E.B.	W.B.	E.B.	W.B.
Fort Wayne, Ind.	84	104	3,354	3,385
Crestline, Ohio	86	103	3,682	3,372
Canton, Ohio	96	123	3,728	6,213
Pittsburgh, Pa.	100	125	6,843	5,558
Altoona, Pa.	130	135	8,556	3,660
Harrisburg, Pa.	128	139	8,293	8,729

On October 23, Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, stated that the gross capital expenditures of the Class I lines from 1923 to 1929 inclusive, was \$5,869,107,916, of which \$678,599,259 had been expended for new locomotives. He showed the increase in the efficiency and economy of railway operation that has occurred since the adoption in 1923 of the railway's program of transportation improvement. Basing comparisons on 1922, the year 1929 showed the following improvements, in the United States as a whole: Freight cars per freight train increased from 39.6 to 50.0; net tons per train increased from 676 tons to 804 tons; freight fuel consumption per 1,000 gross ton-miles was reduced from 163 lb. to 125 lb.

He also declared that an extension of a train limit rule or regulation or law would not only stop or retard the march of railway progress in the direction of operating efficiency, but would largely eliminate the remarkable progress which has already been made during recent years.

P. G. Otterback, assistant to the chairman of the Western Railways Committee on Public Relations, showed in a detailed compilation that 9,576 road service steam locomotives were ordered or built by railways in the United States between January 1, 1920, and August 1, 1930. Of this total, 6,042 were freight service locomotives, of which 99 per cent had over 30,000 lb. tractive power, 97 per cent had over 40,000 lb. tractive power, and 94 per cent had over 50,000 lb. tractive power. On the basis that the average 70-car freight train would have a tonnage of 3,000, and could be handled at a speed of 5 m.p.h. over a ruling grade of 0.6 per cent by a locomotive with about 49,000 lb. of tractive power, Mr. Otterback, stated that a substantial majority of the freight locomotives ordered since January 1, 1920, were purchased to handle trains in excess of 70 cars.

Western Roads Appeal to I. C. C.

Present situation declared a menace to adequate transportation

DECLARING that the situation of the western railroads "has become sufficiently serious to menace the maintenance of adequate transportation for the future," the Association of Western Railway Executives has filed with the Interstate Commerce Commission a statement of outstanding facts of their present condition with a request that the commission give to the facts presented "the weight to which they are entitled in administering the grave responsibility which Congress has placed upon you in the interstate commerce act."

The executives assert that it is not their purpose to undertake to affect the decision of pending cases, but simply to call the facts to the commission's attention. Reference is made, however, to the fact that any possible increase to be expected from the western trunk line class rate revision will be more than offset by the reductions prescribed in the western grain rate structure and the executives submit "that any general rate reductions, or, in fact, any material reductions of rates on commodities which constitute a substantial portion of the tonnage of the western railroads, would menace our already insufficient revenue to a point where grave consequences may ensue."

This statement was submitted by the railroads after some of the executives had made unsuccessful efforts to obtain an informal conference with the commission to discuss their situation, which the commission declined to grant on the ground that it would be improper as it would necessarily involve litigated cases. The roads had petitioned for a reconsideration of the western grain case while others have asked a reconsideration of the class rate case.

It is stated that the facts set forth have no direct relation to the present depression in business but that their adverse effect has necessarily been emphasized by the condition which confronted the country during the current year and that "a revival of the trade and commerce of the country would not, in and of itself, solve the problems incident to the maintenance of adequate transportation by railroad for the future in the western district." Some of the "outstanding facts" are summarized as follows:

Present Situation Summarized

1. Present income of the Western district railroads has become insufficient to insure the maintenance of adequate transportation for the future.
2. Carriers in the Western district as a whole cannot expect to continue constructive programs of capital expenditures in the face of further diminution of their inadequate revenue.
3. In no year since 1920 have carriers in the Western district as a whole been in receipt of earnings equivalent to a fair return upon the value of their property.
4. The decline in passenger travel by railroads continues to reduce income of these railroads to a disturbing degree.
5. Forms of competitive and, to a large extent, unregulated transportation which have been and are being

WASHINGTON, D. C.

developed, some by government aid, have prevented the normal growth of freight traffic on the railroads.

6. The great decline in carloadings of freight in the Western district continues and there is no immediate promise of its restoration to a normal level.

7. Freight levels in the Western district, when measured by any standard, fail to reflect the increase in operating costs compared to the pre-war level to the same extent as in the remainder of the United States.

8. Before the war, railroads in the Western district were able to pay to their stockholders dividends, although modest, in a greater ratio to their capital stock than in the remainder of the United States. This situation has been completely reversed.

9. Railroad net operating income in the Western district has been so depleted during the present year that, for the first six months thereof, it is less than the interest accruals upon the funded debt, with no margin for either dividends or surplus.

10. The curtailment of expenditures for maintenance of ways and structures and equipment, which has been necessary in the face of reduced income, has proceeded to a point where the necessity for further action along this line cannot be viewed as in the public interest.

11. Even with the restoration of general business conditions and traffic volume to a more nearly normal level, it will take the Western railroads a considerable period to solve the problems which the present situation has forced upon them, even if more disastrous consequences of the present situation are to be avoided.

As "indicative, but in no sense comprehensive," the statement then presents in tabular form certain outstanding facts of the present situation which the roads ask be given consideration and concludes by saying: "We believe the present conditions surrounding the railroad industry in the Western district demonstrate the urgent need of co-operative effort between those who regulate the railroads, those who operate them and those who use them in order that an adequate system of transportation for the present and the future shall be assured."

The statement says in part:

This statement is submitted on behalf of the Association of Western Railway Executives. Believing that the situation of the western railroads has become sufficiently serious to menace the maintenance of adequate transportation for the future, we conceive it to be our duty to the public and to the properties in our charge to report these facts. Under the interstate commerce act, as amended by the transportation act, 1920, the ultimate obligation in respect to the maintenance of an adequate system of transportation by railroad is placed upon the Interstate Commerce Commission, the effect of which has been described by the Supreme Court of the United States as putting "the railroad systems of the country more fully than ever under the fostering guardianship and control of the commission." Many of the facts herein presented appear in statistical reports filed either pursuant to law or regulations of the commission or are matters of common knowledge. They have not, however, been brought together in the present form so that their combined effect may be fully appreciated.

In no year since 1920 have the railroads in the western district received earnings which approximate a fair return upon

the aggregate value of their properties. During this period there has been a continued reduction in the general level of freight rates, beginning with the year 1921 when drastic reductions were made in the rates on grain, grain products and hay and on livestock in our territory, and in the year 1922 when the freight rates on all other commodities were reduced 10 per cent, all pursuant to decisions of your honorable commission. Since that time there have been numerous other decisions dealing with rates on particular commodities which have resulted in further loss of revenue. There have also, from time to time, been certain readjustments made by the railroads themselves, in the usual course of business, which have, to some extent, affected the general rate level. Some of these were made necessary by the indirect effect of decisions of the commission readjusting other rates.

While it has on occasion been critically asserted that the railroads themselves have contributed to the downward trend of freight rate levels by voluntary reductions in rates, such reductions constitute a small part of the total rate reductions which have taken place since 1920. Such voluntary reductions as have been made have been the result either of managerial judgment as to rates which might be required for the movement of traffic in particular circumstances or they have been the natural result of competition between railroads, the competitive principle of railroad operation having been retained and safeguarded by Congress in the transportation act of 1920 as being in the public interest.

Attention is then called to the fact that the western roads in 1925 undertook, through appropriate proceedings before the commission, to secure an increased freight rate level in their territory but that the petition was denied on the ground that no financial emergency existed sufficient to warrant a horizontal increase in freight rates throughout the western district. Since that time, the statement continues, "we have continued our best efforts to reduce the cost of operation and have been successful in achieving substantial results," some of which are mentioned, but it is pointed out that meanwhile the roads have been required, through arbitration and mediation proceedings under the railway labor act, to increase wage scales until to-day for many classes of employees the wage scales exceed those in effect in 1920. Reference is made to the drastic curtailment of passenger revenue due to competition of automobiles and busses and trucks which use the public highways with little or no contribution to the cost of constructing and maintaining them, and to the new construction of pipelines throughout large sections of the western district for natural gas which is already making important inroads upon the revenue from coal traffic of western district carriers and gives promise in the future of seriously curtailing the movement of coal and other fuel throughout the territory. It is also stated that the growth of pipeline transportation of gasoline constitutes a most serious present and future menace to railroad revenues.

Waterway Development

During the same period, it is pointed out, there has been a further development of inland waterways and the operation of government barge lines which has resulted in a serious diversion of an increasingly large volume of freight traffic from the steam railroads to the waterways, and which is being carried on in part at the expense of the federal and state governments. Also, the roads say, the diversion of freight traffic to the automobile truck has proceeded already to a point where a substantial portion of the short haul freight traffic has been lost to the rail carriers. Coincident with this there is said to have been a marked tendency on the part of regulatory authorities to require reductions in freight rates for the longer hauls. Attention is also directed to the request "by high public authority" that the railroads undertake constructive programs of capital expenditures to assist in alleviating the depressed condition of industry and in overcoming threatened

unemployment and to their recent reductions in rates for the relief of drouth conditions, "for the reason that we believe it to be in the public interest that the railroads should be so situated as to be able to co-operate in times of need."

"The freight rate levels in our territory today," the statement says, "fail to reflect, even approximately, the increased costs of operation as compared with the pre-war period. Labor and material costs and taxes continue on a relatively high level, whereas, in the face of a declining passenger traffic and a falling off in freight traffic, we have been required to cope with the additional problem of reductions in the price for which we must sell our product, i.e., transportation. The western district railroads serve approximately two-thirds of the total area of the United States, which area is dependent upon their successful operation for its transportation."

Statement of "Outstanding Facts"

The detailed statement of the "outstanding facts" points out that in 1929, the year of largest net railway operating income for carriers in the Western District since the war, there was a shortage below a fair return on ascertained property value, plus added property, of \$96,764,000. Referring to the failure to earn any return in large amounts of new property added since 1920 the statement says this fact must be given consideration in planning and financing programs of further capital expenditures. Passenger revenues in 1929 were only 54.45 per cent of those in 1920 and in the first six months of 1930 there was a reduction of 15.31 per cent as compared with the corresponding period in 1929. Freight car loadings for 40 weeks in 1930 show a reduction of 11.2 per cent as compared with the corresponding period in 1929, ranging from a reduction of 4.2 per cent in the first week of the year to 19.35 per cent in the week ended October 4. It is pointed out that the increase in the average revenue per ton-mile in 1929 as compared with 1915 was only 32.3 per cent in the Western district as compared with 68.7 per cent in the Eastern district and 41.3 per cent in the Southern district, and that the 1929 freight rate level was 18.3 per cent less than that of 1921. It is also shown that not only did the commission in 1926 deny the application of the Western roads for a 5 per cent increase in revenues but there has been a further reduction since that time of 2.11 per cent in the average ton-mile earnings in the Western district.

While the Eastern and Southern roads have been able to increase the ratio of dividends paid to stock outstanding from 1917 to 1929 the Western district roads showed a decrease from 4.93 to 4.88 per cent and there was a decrease of 10.11 per cent in the dividends declared from current income.

In July of this year the Western roads reduced their expenditures for maintenance by 18.47 per cent as compared with July, 1929, and in August maintenance expenditures were reduced 21.76 per cent.

As indicating the inroads on railway traffic made by the trucks the statement shows a gradual reduction in the tonnage of less than carload freight carried by the Western roads from 26,115,830 tons in 1916 to 17,298,619 tons in 1929. The total loss in revenue from the reduction in l.c.l. freight in 1929 as compared with the average for the five years 1916-1920 is placed at \$102,616,871.

Re-Opening of W.T.L. Class Rate Case Also Asked

The roads in western trunk line territory have also filed with the commission a petition for a re-opening,

reconsideration and modification of the commission's report in the western trunk line class rate case, in which it prescribed a revision of rates including both increases and decreases but estimated that the effect would be to increase the revenues of the carriers by \$10,000,000 to \$12,000,000 a year. A study of the report convinces the roads, the petition says, that the actual results will not reach the intended increase, but even if the intended increase were realized, it says, "nothing would better expose the inadequacy of that sum than the report itself," and it is asserted that the average annual deficiency below a fair return for the western trunk line territory has been \$125,326,067 for the years 1921 to 1929. The total deficiency for the group for the period is thus placed at \$1,127,934,604, described as "a figure so huge that it should readily impress one of the justice of the carriers' claim to unreserved relief." The petition states that the reductions included in the proposed revision are not only incompatible with the revenue purpose of the proceeding and the mandate of section 15a, but that they result from a theory which is contrary to the evidence. The petition includes 133 printed pages, devoted to argument on thirteen points on which the roads seek a reconsideration.

National Policies Menace Railway Employee Welfare

DIRECTING attention to the fact that the average number of persons employed by the railroads of the United States during the first eight months of 1930 was only 1,554,552, or a figure smaller than for more than 20 years, Samuel O. Dunn, editor of the *Railway Age*, vigorously attacked governmental highway and waterway policies in an address before the annual conference of the officers and general chairmen of the Brotherhood of Railway Clerks at St. Louis, Mo., on October 27. Mr. Dunn urged railway employees throughout the country to protest against the policies of both the national and state governments, which, he said, are largely responsible for the present unemployment among them.

After explaining that there has been a reduction of about 127,000 employees on the railroads during 1930, he said that the general tendency of railroad employment has been downward for some years, even when general business has been good. General business was good from 1923 almost to the end of 1929; but the number of railway employees in 1929 was almost 200,000 less than in 1923, and is this year about 320,000 less than in 1923, Mr. Dunn pointed out.

"This is in very striking contrast to what occurred prior to the last decade," he continued. "In 1890 the number of railway employees was 750,000. In 1900 it had increased to more than 1,000,000; in 1910 to 1,700,000, and in 1920 to more than 2,000,000. Why did the number increase almost 200 per cent within these 30 years, and almost constantly decline within the last 10 years? There were improvements in railroad plants, increases in the efficiency of operation and increases in output per employee during the 30 years prior to 1920 just as there have been since. The real reasons for the decline in railroad employment within recent years are to be found in the enormous decline of passenger traffic, and in the fact that railroad freight traffic increased on the average only one-third as much

per year in the nine years ending with 1929 as it did throughout the entire 30 years from 1890 to 1920.

"Why have the railways been losing so much passenger business during the last decade, and why has the growth of their freight business so greatly declined? Their passenger traffic has declined so much because of the construction of hard-surfaced highways and the enormous increase in transportation by motor vehicle upon these highways. The growth of their freight traffic has so greatly declined for several reasons, but largely or mainly owing to the increased competition of motor trucks on highways and of other carriers on waterways.

"The highways were constructed by the expenditure of public money raised by taxation of all the people, including railway owners and employees, and were intended for the use of private automobiles and other vehicles of similar size and weight. The private automobile has taken most of the passenger traffic that the railways have lost, but a very large part of it has been taken by motor buses. The motor truck has taken a great deal of freight business, and is taking it now more rapidly than ever. The size, weight and speed of both motor buses and trucks have been constantly increased; many trucks are now pulling trains of trailers; and they are competing with the railways for long haul as well as short haul passenger business, and not only for short haul, less-than-carload freight business, but also for long haul freight traffic such as the railroads handle in carload quantities.

"Undoubtedly the most important reason why they have become able successfully to compete with the railways for a rapidly increasing amount of traffic is that while the railways have to furnish their own highways at great expense to themselves, the motor coaches and motor trucks are enabled to make low rates that do not represent the true cost of highway transportation because they use highways built and maintained by the taxpaying public. Another important consideration is that their employees work longer hours and receive smaller wages than railway employees.

"The government already has spent hundreds of millions of dollars in improving rivers and building canals. It proposes to spend hundreds of millions more for the same purposes. It charges tolls for steamships using the Panama canal, but it will not allow the railways to make low rates to the Pacific coast to meet the competition of these steamships. It allows all other waterways to be used absolutely free by carriers and shippers, which means that all the public money spent on these waterways is given as a subsidy to those who use them to take traffic from the railways and reduce railway employment. Furthermore, the government is itself operating a barge line upon the Mississippi river system at a large loss which the public pays, and which loss is therefore another subsidy that is used to divert traffic from the railways. At the same time this government-owned barge line pays its employees much lower wages than those paid by the railways with which it competes.

"Why should our state and national governments thus attack the capital invested in railroads, and the employment of railroad men, by using the taxpayer's money to divert traffic from the railways? The owners of the railways and their employees are citizens who pay taxes and perform all the other duties of citizenship. Have they not then the same right as other citizens to have their interests safeguarded and fostered by their state and national governments?

"The difference between the way in which the rail-

ways and other means of transportation have been and are being treated has been largely due to political influence. The railways themselves have almost no political influence, but railway employes have an enormous amount of political influence which they could use to protect their employment. If railway employes throughout the country would rise up against these government policies, which have such a plain tendency to deprive them of their employment, there would soon be a very large reduction in the number of public men who believe it is good politics to favor every measure which is harmful to the railways, regardless of its effects on the employees of the railways.

"The length, width and weight of motor buses and trucks should be regulated and limited and probably trailers should be prohibited. The constant increase in their size and weight and in the speed with which they are driven seriously interferes with the use of the highways by private motorists and is a menace to their safety. The amount that should be paid for the use of the highways by buses and trucks, as compared with other automobiles, should be thoroughly investigated and determined on sound economic principles by expert government authority, and then their operators should be compelled to pay accordingly. It is unfair to the taxpayers, including private motorists, for the owners of buses and trucks to be allowed to use the highways principally at the expense of the taxpaying public, and it results in subsidized and unfair competition with the railways, and reduction of railway employment. Their operation and their rates should be as strictly regulated as those of the railways. Why should they be allowed to make any discrimination in their rates that they please to get business, while the railways are prohibited from making such discrimination?

"All the organized strength of railway employees should be arrayed against the efforts that are being made by politicians and selfish business interests to get the federal government to spend money recklessly upon rivers and canals, because the claims made that these expenditures are needed to 'relieve the railways' and to 'cheapen transportation' are not supported, and cannot be supported, by facts. The railways do not need 'relief,' the greatest need of the railways and their employes is for more traffic. The proposed development of waterways will not 'cheapen transportation,' because, including the taxes paid by the public for improving and maintaining them, the cost of transportation on practically every river and canal in this country is and will continue to be greater than the cost of transportation by railroad. The actual results of most inland waterway development are to subsidize shippers at the expense of the taxpayers, and, without economic justification, take traffic from the railways and employment from their employes. Railway employes should demand that the government retire from the operation of its barge line upon the Mississippi river system because it is economically unsound and unjust for the government to thus use the taxpayer's money to take from the railways traffic which the railways, although paying higher wages, could handle at a lower total cost, and the loss of which deprives railway men of their employment.

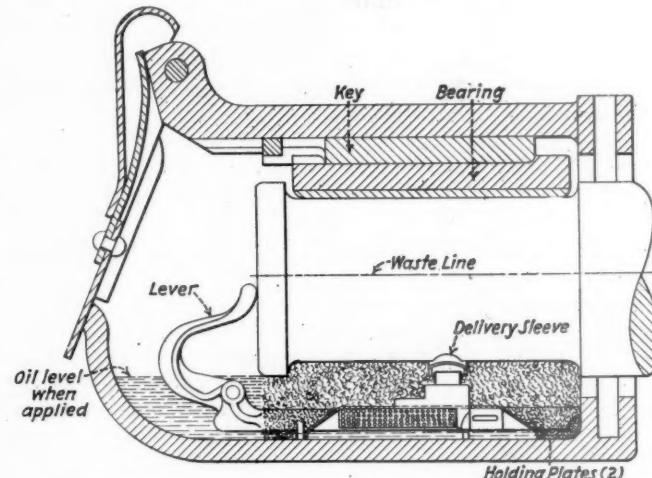
"The number of railway employes will be determined principally in the future, as it has been in the past, by the volume of railway traffic; and if your governments, from which you have a right to demand fair treatment, continue to follow policies tending to reduce railroad traffic, then the number of persons employed by the railways will continue to decline."

Hennessy Mechanical Journal Lubricators

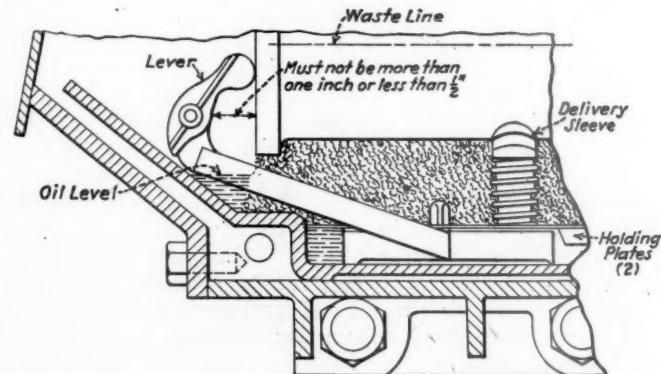
M ECHANICAL journal lubricators, the product of the Hennessy Lubricator Company, 136 Liberty street, New York, which are designed to supply oil of any consistency in predetermined quantities by mechanical means to engine truck, trailer-truck, driving-wheel and A. R. A. journals, have undergone considerable development since they were first described in the May 27, 1921, issue of the *Railway Age*. These lubricators have few parts and can be applied in tender-truck, car-truck and trailer-journal boxes without any change in equipment. The engine-truck and driving-journal design include the cellars which are applied without change or addition to the bearings, journals or boxes.

Driving-Wheel and Engine-Truck Journal Lubricators

The engine-truck and driving-wheel journal lubricators are set in the driving-box and engine-truck cellars which are furnished to fit the boxes for each application. A felt pad is used as a medium for distributing the oil over the journal after it is pumped to the journal face by the mechanical pump located in the base of the cellar. Pumping action is obtained from the lateral wheel movement which is positive and regular. A contact rod, which is set against the driving-wheel hub, works the pump plunger which is set in the oil reservoir of the cellar. The oil is forced to the face of the journal through passages fitted with ball-check valves which prevent the oil from re-



The Lubricator Assembly as Applied to the Journal Boxes of Tenders and Cars



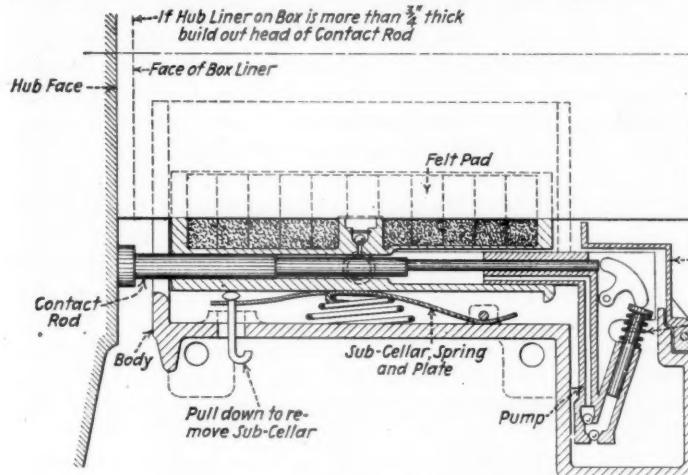
A Trailer-Truck Application of the Hennessy Lubricator

turning to the reservoir, thus insuring positive lubrication for the journal. The felt pad is kept in contact with the journal by means of a sub-cellular spring and plate. The felt pad is assembled in what is called a supporting plate. This plate is supported in the sub-cellular on four coil springs, the action of which keeps the felt pad in uniform contact with the journal face. Thus, the felt pad is held securely against the face of the journal and, being continually supplied with oil, is able to distribute it over the face of the journal under all conditions, insuring constant lubrication when the equipment is in operation.

The engine-truck and driving-journal lubricators are so made that all attention necessary can be given them and all parts can be removed for inspection without disturbing the cellar. This permits of the cellar being securely fastened in truck or driving box.

Trailer-Truck Lubricators

The trailer-truck journal lubricator can be set in the regular trailer-truck journal box without any change in equipment. The lubricator consists of an oil pump, a pump lever, an oil-delivery sleeve, and two holding plates.



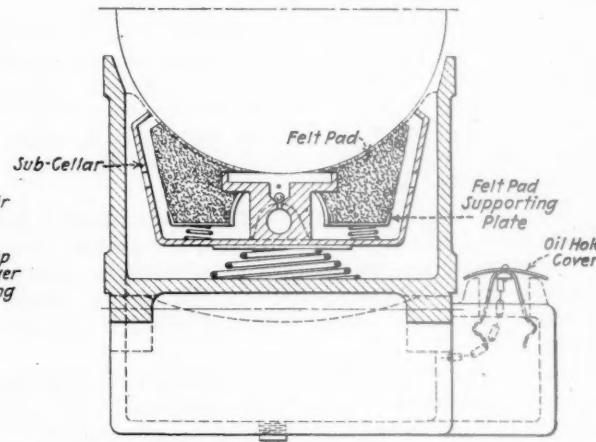
The Hennessy Mechanical Lubricator

The holding plates hold the lubricator in position in the box and keep the waste from the base of the cellar, thus forming an oil reservoir in the bottom of the box. The pumping action of this lubricator is also obtained from the lateral movement of the wheel. The oil-delivery sleeve is contoured to fit the journal and is held in place



B. & O. Locomotive 4485 on Which Mechanical Journal Lubricators Were Tested

against the journal face by a coil spring. The plunger of the pump is set at an angle to the lubricator base in order to clear the offset and sloping end of the conventional type of trailer-truck journal box. After the lubricator is

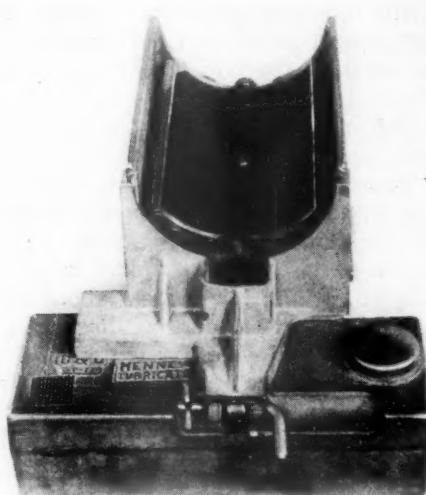


Applied to a Driving-wheel Journal

set in the journal box and the contour delivery sleeve set against the journal, the box is packed with waste in the usual manner. The two holding plates fit loosely in the bottom of the cellar above the oil reservoir which they form. Lugs on the lubricator body are used to keep the holding plates in place and to keep the lubricator located in its proper position under the journal in the cellar. After the journal is packed, enough oil is added to fill the space below the waste to within one inch of the journal.

A.R.A. Journal Lubricators

The A.R.A. journal lubricator for tenders and cars is similar to that of the trailer-truck journal lubricator with the exception that the plunger-cylinder casting is not set an angle to the base of the box and that the device is much smaller. The oil-delivery sleeve is contoured to fit the journal face, but the spring which holds it in tension against the journal is enclosed within the sleeve. In this lubricator the lateral motion of the wheel also furnishes the pumping action for the pump. Holding plates are set over the lubricator to form an oil reservoir in the base of the cellar and prevent the waste from coming in contact with the oil that passes into the plunger cylinder before it is pumped to the journal face. The lubricator is held in position, with respect to the end of the journal, by means of a small piece of sheet metal that is keyed to the end of the lubricator. The other end of this piece of sheet metal rests against the back end of the journal box



The Driving-box Lubricator Assembly

to prevent the lubricator from moving. In applying the lubricator, the waste packing is removed and the journal boxes jacked up. The bearing and key are then removed and the journal box jacked down on the journal. The lubricator is then placed in position under the journal and pushed back as far as possible. After the lubricator is applied, the journal box is jacked up, the bearing and key applied and the journal jacked down into position. The box is then packed in the usual manner with saturated waste. Oil is applied to the box in the usual manner.

Operating Tests

A number of the older type Hennessy journal lubricators, as well as the improved type, have been in service for a number of years but, the most comprehensive tests to which the lubricators for all journals have been subjected was that which has been recently made on the Baltimore and Ohio.

The B. & O. heavy Mikado locomotive No. 4485 was fully equipped with engine-truck, driving, trailer and tender-journal lubricators in March, 1929, and has been in continuous fast-freight service between Brunswick, Md., Potomac Yards, Va., Baltimore, Md., and Philadelphia, Pa., making more than 35,000 miles without failure or lubricating trouble of any kind.

Examination of the driving journals after 14 months in service revealed that both hub faces of a pair of wheels were worn less than a total of $\frac{1}{8}$ in. and that the crown brasses were not worn enough to require renewal. The main bearings showed .015 in. wear at the center line. The remaining driving journals showed .006 in. to .008 in. wear at the center line.

The records show that the trailer and tender journal lubricators had not been disturbed, the packing removed or attention given them other than oiling at monthly intervals, since they were applied. All of the journals of the locomotive and tender operated at much reduced temperatures.

So far as our records reveal this is the first instance of a heavy locomotive being fully equipped and operated successfully with mechanical journal lubricators.

Crime Has Almost Disappeared on Railroads

THE improvement in crime conditions on the railroads is typical of the strides which the railroads have made in almost all lines in recent years, according to L. A. Downs, president of the Illinois Central, in an address at a dinner given by the Chicago Railway Special Agents in that city on October 23. "At one time," Mr. Downs continued, "train robberies were common occurrences, railway travelers were daily victimized by bandits, card sharks and pickpockets, and freight, express and mails were plundered almost at will. Since then crime conditions on the railroads have been greatly improved. The train robber, the card shark, the pickpocket, and even the hobo have all but disappeared from the railroads. Today one is safer on a railway train than when in one's own home."

"Vandalism against railway property has been practically wiped out. The amount of goods stolen while in the care of the railroads is now exceedingly small. Last year, for instance, the loss to the railroads from theft averaged only $1\frac{1}{2}$ cents for each carload of freight handled. And the remarkable thing is that this

improvement has gone right along during a period in which there has been an appalling increase in crime generally, when respect for law and for the human and property rights which the law is designed to protect has suffered a relapse. No more striking tribute could be paid to the intelligent, courageous and resourceful work of the railway police.

"The railroads are among the heaviest taxpayers in the country. They contribute at least their full share to the support of all local governments. That being the case, it is a surprising thing that they have to furnish their own police protection—a service which every other citizen expects to receive in return for the taxes he pays. That seems to me to be a hangover from the days when railroads were regarded with suspicion, distrust and hostility. However, since it is necessary for the railroads to provide their own police protection, it is appropriate that their police should have established the fine record which they have.

"The improvement in crime conditions on the railroads is typical of the strides which the railroads have made in almost all lines in recent years. There has been increased efficiency in every department of railroading. The comfort, convenience and safety of railway patrons have been advanced. Passenger, freight and express service have been improved. Personal injuries to railway employees have been reduced. Loss and damage claims have been curtailed. Nor do the improvements stop with betterments in service and increased safety. Happily, public sentiment toward the railroads has undergone a change equally as striking. Not many years ago there existed a feeling of hostility and distrust toward the railroads that caused no end of discomfort and embarrassment. The railroads suffered severely from this lack of public good will. You all felt it in your work and you all know from your own experience how much better these relations are now.

"The railroads have made an earnest and persistent effort to render the best service possible and to keep the public fully informed regarding railway matters, and this effort has been rewarded by the virtual disappearance of the adverse public attitude toward the railroads which once existed. It has given way to a friendly and constructive public attitude. The public has learned to regard the railroads as its friends, not its foes. It wants to work with them instead of merely working them. The railroads are less widely regarded as fair prey for unlawful practices. I have no doubt that the improvement in crime conditions on the railroads can be traced in part to this better feeling that has come to exist between the public and the railroads.

"You who are engaged in railway police work have your share of the responsibility for the maintenance and further improvement of relations with the public. As I view it, public relations is not a departmental activity; it is something for every member of the railway organization to encourage. You all know, at least you all should know, the main facts about our business, and it is your duty to see that those with whom you are in contact from day to day understand and appreciate these facts. Above all, you can do a great deal to give the public a friendly attitude toward the railroads through the fairness and tact with which you meet the varied situations which arise in the course of your work. Let me urge you all to be good workmen for public relations as you are good workmen for safety and security."

Looking Backward

Fifty Years Ago

The St. Paul, Minneapolis & Manitoba [now the Great Northern], which took the bankrupt St. Paul & Pacific and has already made it a great system with about 700 miles in operation and several branches under construction, appears to be contemplating still further conquests of territory. It has projected a line from Crookston, Minn., easterly for 250 miles across Minnesota, to Duluth. It is also planning to push its branch westward from Crookston clear across the territory of Dakota, something like 350 miles, making a line about 600 miles long, north of and parallel to the Northern Pacific, from the Missouri river to Lake Superior.—*Railway Age*, November 4, 1880.

A very important decision, especially affecting the St. Louis & San Francisco, but also establishing the general principle that lands granted to railway companies are not forfeited by failure to complete the road at the time specified in the grant, has just been rendered by the attorney general of the United States. The Atlantic & Pacific, when it completed only a small portion of the line for which it had been given a large grant of public lands, was succeeded by the Frisco. For the past nine years no extension has been made to the road, and although the Frisco has now begun construction of the proposed extensions, the question arose as to whether the land grant had not been forfeited.—*Railway Age*, November 4, 1880.

Twenty-Five Years Ago

Arthur Ridgway, general superintendent of the Silverton Northern, in Colorado, has resigned to become an engineer in charge of special work in the office of the chief engineer of the Denver & Rio Grande at Denver.—*Railway Age*, November 3, 1905.

On Monday, Tuesday and Wednesday of last week E. H. Harriman, president of the Union Pacific and the Southern Pacific, and a party just returned from the Oriental excursion of the Secretary of War, traveled from Oakland, Cal., to Jersey City, N. J., in 74 hrs. 24 min. The run to Chicago, over the Southern Pacific, the Union Pacific and the Chicago & North Western, was made in 50 hr. 44 min., while the run from Chicago to Jersey City over the Erie was made in 21 hr. 38 min.—*Railroad Gazette*, November 3, 1905.

Ten Years Ago

A new record for this year for the number of cars loaded with commercial freight on the railroads of the United States was set during the week ending October 9. The total was 1,009,787 cars, as compared with 982,171 for the corresponding week of 1919, and 959,722 during the corresponding week of 1918. This was the first week this year in which the freight car loadings passed the million mark. The total of 1,009,787 for a week has been exceeded only once, and that in 1919, according to the records of the Car Service Division of the American Railway Association.—*Railway Age*, October 29, 1920.

A joint committee on automatic train control was recently appointed by President Aishton of the American Railway Association, with C. E. Denney, vice-president and general manager of the New York, Chicago & St. Louis, as chairman. The duties of the committee will be to prescribe rules and requirements for tests of automatic train control devices, and arranged for necessary records of performances and costs of installation and maintenance and comparison.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Children's Interest in Railroads and Books and Periodical Material Useful in Meeting It. A memorandum for reference by teachers, students in normal schools and others who have to help children secure material for "project-books" or otherwise study transportation. 3 p. Pub. by Library, Bureau of Railway Economics, Washington, D. C. *Apply.*

Highway Transport: Correlation and Co-ordination with Other Methods of Transport. Papers and Conclusions in connection with Fifth Question "Traffic and Administration" at Sixth International Road Congress. Railroad men who participated were Ralph Budd, in report for United States; M. Pourcel, in report for France; James Milne, in report for Gt. Brit.; Felice Fiori, in report for Italy. Conclusions, by Henry Trumbower. 9 Reports. Pub. by Permanent International Association Road Congresses, Paris, France. Included in Reports at Sixth Congress which are available only to members.

The Legislative Evolution of the Interstate Commerce Act, by Clarence A. Miller. Introduction by Hon. John J. Esch. In four parts. Part I, "Evolution of Act" shows the evolution of section by section, paragraph by paragraph. Part II discusses the use of legislative history of Federal statutes as an aid in their interpretation. Part III is a guide to the legislative history of the Act. Part IV takes up the legislation supplementary to "Interstate Commerce Act." There is a comprehensive Index. An exceptionally valuable and well-arranged aid to research. 519 p. Pub. by John Byrne & Co., Washington, D. C., \$7.50.

Railroad Facts No. 8—A yearbook of Railroad Information [1930 Edition]. "The 'railroad problem' is a three-sided problem vitally affecting three great classes of our citizens—the shipping and traveling public, the railway employees, and the investors in railway securities.... In the following pages the reader will find a correct statement of the present railway situation, and, in addition, will see just what has been done in recent years toward solving the railroad problem from the viewpoint of the three interested classes." p. 1. 94 p. Pub. by Western Railways Committee on Public Relations, Chicago, Ill. *Apply.*

Periodical Articles

The Enemy of Prosperity—Overproduction: What Shall We Do About It? by Stuart Chase. "This essay is an attempt to state a problem...." p. 650. Harper's Magazine, November, 1930, p. 641-650.

Pacific 4-6-2, by Edward Yeomans. An appreciation of the steam locomotive and the description of a ride on a locomotive of the Federal Express with Engineer Clifford Bray and Fireman N. S. Buckley from Boston to Providence. Atlantic Monthly, November, 1930, p. 639-648.

A Prediction of Lower Prices. Editorial comment on a recent statement of the secretary of the Taylor Society, Dr. H. S. Person. Taking "the railroads as an example" on page 2588 the editorial considers certain current conditions. Commercial & Financial Chronicle, October 25, 1930, p. 2587-2588.

What a 100-Ton Truck Looks Like. It belongs to a firm in England who constitute "specialists in the movement of heavy machinery, boilers, etc." and the caption of the photograph states that it is so big it travels only at night and that the two drivers, one in front and one in rear, are connected by telephone. Business Week, October 29, 1930, p. 10.

Odds and Ends of Railroading

We Can't All Be Alike

The Cleveland Union Terminal claims the greatest difference in car inspectors, advancing as evidence A. Iorio and A. Foeking, who are 5 ft. even and 6 ft. 5½ in. tall, respectively.

Pass the Cigars

The latest prominent railroaders to arrive in this vale of tears are two sons and a daughter of Emil Ritty, accountant for the Baltimore & Ohio at Akron, Ohio. Mr. Ritty thus enters the select list of four or five railroaders who are fathers of triplets. They're all doing fine, thank you.

Minister-Conductor

A railway conductor in summer and a minister of the gospel in winter is the dual role played by H. T. Harper at Mattoon, Ill., and Wilburton, Kan. The Illinois winters proving unkind to Mr. Harper's health, he gives up his work as an Illinois Central conductor during the colder months and serves as the pastor of a Methodist Church in Kansas, where he has put up a new church building and built up a thriving congregation.

Japanese Women Ticket Sellers

Women telephone operators and ticket sellers at railroad stations form the largest group of Japanese women workers. Approximately 10,000 women are ticket sellers. Those with the government railways usually work eight hours a day, with four days off a month. The average pay is from \$15 to \$17.50 a month. At least six years of primary school work is required for those entering government employ. The costume of the railway ticket seller is a light purple or blue coat.

Other Lands—Other Customs

To an American traveling in Europe, it seems rather odd at first to see people bowing and removing their hats upon entering or leaving a compartment already partially occupied by strangers. Similarly, on seating oneself, or leaving the table in a dining car, the same bowing performance is gone through with. After observing this for a month or two with amusement, it finally seems right and proper, and, on returning to America, this perfectly useless, but nonetheless charming courtesy, will probably be missed.

Incubator for Foremen

Although Hanson, Ill., has only one store, a postoffice and one mail route, it is known on the Illinois Central as an "incubator" of section foremen. This tiny hamlet in the last 33 years has produced 12 section foremen for the Illinois Central and other railroads, practically all of them having been suggested for promotion from gang laborers by James Leach, who has been foreman at Hanson since 1897. Mr. Leach received his own training as foreman under L. A. Downs, now president of the Illinois Central, who was at that time roadmaster on the local division.

Two of a Kind

In their own peculiar way, John F. X. Amtess and Ricardo Sinneri are more or less geniuses. They determined to steal something one rainy day when there was nothing else to do. Now, lesser minds might have selected automobiles, pocketbooks, or any other of the numerous things commonly stolen, but such a crime was not for John and Ricardo. They determined to be original, and steal a railroad. When the police

of Port Arthur, Texas, arrived on the scene, they had already taken up and carted off about two blocks of Southern Pacific sidetrack. They were apprehended as they returned for the last load. And, as a final touch to an artistic job, they were using tools stolen from the Kansas City Southern.

Lots in a Name

A baby born recently on a Pennsylvania train has been christened Ralph Penrod Sackerman. "The 'Penrod,'" the proud father explains, "is about as near as we could approach the name of the Pennsylvania."

In Memoriam

Observing a 4-6-0 locomotive on the London & North Eastern in England with the rather unusual name of "Valour," inquiry developed that this locomotive represents a stirring sentiment. It was built by the Great Central Railway (now part of the L. & N. E.) to commemorate the brave deeds of its employees who were killed in action during the War.

In Otley churchyard is another striking memorial. It is a full-sized replica of the northern portal of the Bramhope tunnel of the L. & N. E. It was erected by the contractor in 1849, in memory of the 30 employees killed during the construction of the tunnel.

Most Perfect Horse-Shoe?

Chief Engineer R. W. Barnes of the Texas lines of the Southern Pacific claims that the curve at Torcer, Texas, 85 miles east of El Paso, is one of the most complete "horse-shoes" in the country, and it is the extreme example of the loop method of development, exceeded only by a complete loop made with a crossing at separate grades. He describes this curve as follows:

"The main horse-shoe curve at Torcer is a 10-deg. curve, having a central angle of 235 deg. 45 min., the continuous curve being 0.65 of a full circle. At the ends of the horse-shoe, the tracks are 670 ft. apart. The distance around the horse-shoe from the two points is 3,650 ft., all of which is on a compensated one per cent grade. The difference in elevation between the two points is 24 ft. If the line went directly across instead of making a horse-shoe, this short section would be on a grade of nearly four per cent, which explains the necessity and reason for the loop construction."

The Timid Soul Rebels

OPEN LETTER TO THE PRESIDENT OF THE PENNSYLVANIA RAILROAD

"Dear Sir: Some time ago I rode on one of your trains from Jersey City to Elizabeth. The conductor, after taking my ticket, placed in my hatband a narrow blue strip with the inscription 'Keep in sight until collected.'

"When I reached Elizabeth I walked from one end of the train to the other. No one collected the strip. Even the baggagemen and trackwalkers ignored it. But I am an obliging and obedient man. Several weeks have passed. I am still wearing the little blue strip, waiting, according to orders, for one of your employees to collect it. It is becoming frayed and worn from the wind and rain. My friends are beginning to make flippant remarks, and the little children run and point.

"And now today, changing the strip from one hat to another, I discover an alarming circumstance. Hidden beneath the hatband was the rest of the sentence. The entire order reads: 'Keep in sight until collected AD 6277.'

"I repeat, sir, that I am an obliging and obedient man, but I say in no uncertain tones that there are bounds to even your authority. Must this ticket remain in my family for 4,347 years? Aren't you trying to cover too much territory? I warn you, I can be pushed just so far.

"Yours within limits."

P.D.H.—New York Herald-Tribune.

NEWS

Pennsylvania's Directors Refute Political Canard

Statement answers charges made in Pennsylvania Gubernatorial campaign

Charges made in the Pennsylvania gubernatorial campaign by one of the candidates against the Pennsylvania Railroad and its officers have been characterized as reckless and untrue in a statement issued by the board of directors of the company.

Efforts to place the Pennsylvania Railroad and its officers "in a false and unjust light before the general public" were vigorously answered in the statement, which was addressed to all stockholders of the company, its employees and the general public.

"Charges against the Pennsylvania Railroad and its officers have been recklessly and repeatedly made and are receiving wide publicity," the statement said. "The integrity and good faith of the management have been impugned, and the effort has been made to place the company in a false and unjust light before the general public, the owners of its securities, and its employees."

The statement declares these charges untrue and following each quoted accusation, the actual facts in relation to each charge are disclosed in detail on authority of the board of directors. The charges have to do with taxes paid by the railroad, its policy with reference to the port of Philadelphia, its method of awarding contracts and an allegation that employees were being "coerced" in connection with the coming election.

Longer Locomotive Runs on the C. P. R.

Locomotive runs will be greatly lengthened on the western end of the Canadian Pacific, it was stated in Vancouver last week by W. M. Neal, general manager, western lines.

Following an experiment conducted with great success last spring, when the Canadian Pacific locomotive number 2808 was operated from Fort William to Calgary over nine divisions, hauling a trans-continental passenger train in scheduled time, and retracing the 1,252 miles with another regular passenger train, the company is preparing to extend the system whereby locomotives will pull trains over several divisions instead of over a single division as at present, Mr. Neal said.

Favor "Year of Grace" on Railway Bonds

A number of New York bankers have been discussing the advisability of seeking an amendment to the banking law of the state covering investment in railway bonds, to suspend the operation of earnings requirements of the law for one year in view of the present business depression. It is feared that bonds of several companies which are now legal investments for savings banks might have to be placed on the ineligible list if the present requirements of the law are adhered to. A suspension of the requirements for five years was made during the war.

When the system of longer runs is put in effect across the whole of the main line between Fort William and Vancouver, it was pointed out, only five locomotives instead of fourteen will be used to haul a train over that distance. In other words, Mr. Neal explained, one locomotive will operate through from Fort William to Winnipeg; another from Winnipeg to Calgary; another from Calgary to Field; another from Field to Revelstoke, and a fifth from Revelstoke to Vancouver.

This would avoid changes at Ignace and Kenora, Ont.; Brandon, Man.; Broadview, Moose Jaw and Swift Current, Sask.; Medicine Hat, Alta., and Kamloops and North Bend, B. C.

Counterfeit Passes in N. J.

In the state of New Jersey, where railroads are required by law to accept passes issued by the Secretary of State—which passes are furnished to large numbers of state officials—eight men have been arrested recently for riding on counterfeit passes. The Attorney General of the State has found that there has been a traffic in the sale of these counterfeit passes.

C. N. J. Fare Reductions

The Central of New Jersey plans to inaugurate substantial reductions in single round trip ticket fares between stations in the New York suburban zone. The reductions, which become effective November 1, will bring the round trip rates down to one and one-third times one way fares. No change is proposed in monthly commutation rates.

Chicago—Pacific Coast Time Is Again Reduced

New cut in running time of trains in Northwest re-opens speed controversy

A reduction of three hours in eastbound passenger train schedules and of one hour westbound between Chicago and the Pacific Northwest, effective November 9, was announced on October 26, thereby reopening the speed controversy between the railroads operating between Chicago and California and those operating between Chicago and the northwest coast. This change provides a schedule of 58 hr. from the northwest to Chicago instead of 61 hr., and a running time of 59½ hr. westbound as compared with 60½ hr., while the fastest schedules from California to Chicago are 57 hr. and westbound 56½ hr.

According to the Great Northern, which sponsored the latest reduction in time, the action results from dissatisfaction expressed by Spokane because the "Empire Builder" eastbound arrived at 4 o'clock in the morning. To correct this situation, the departure from Portland, Tacoma, and Seattle was set back 3½ hr., so that the "Empire Builder" will leave Portland and Seattle at 9:30 p.m. instead of 6 p.m., and will arrive at Spokane at 6:30 a.m. instead of 4 a.m. From Spokane to the Twin Cities, the "Empire Builder" will make up three hours, thereby arriving at St. Paul at 11 a.m. instead of 10:30 a.m., and at Chicago at 9:30 a.m. instead of 9 a.m. Westbound the train will leave Chicago at 10:15 p.m. and St. Paul at 8:40 a.m. as at present, but will arrive at Spokane at 9:30 p.m. instead of 10 p.m. and at Seattle at 8 a.m. instead of 9 a.m.

The Chicago, Milwaukee, St. Paul & Pacific will make similar changes in the schedule of the "Olympian." This train will leave Seattle 3 hr. and 15 min. later, or at 9:30 p.m., and Spokane at 6:45 a.m. instead of 3:30 a.m., and will arrive at Chicago at 9:30 a.m. instead of 9:15 a.m. Returning, it will leave Chicago at 10:30 p.m. as at present, and will arrive at Spokane at 9:55 p.m. as at present, and at Seattle at 8:15 a.m. instead of 9:15 a.m.

B. & O. Replies to Pennsylvania

The Baltimore & Ohio has filed a reply to the petition of the Pennsylvania to the Interstate Commerce Commission that it investigate the methods of the Baltimore & Ohio in the transfer of passengers to,

from and through New York City and to and from Newark, N. J. The Baltimore & Ohio points out that it is not, nor has it been, opposed to an investigation of its trainside motor coach service, which has been in effect four years for the accommodation of passengers to and from New York City, Brooklyn and Newark, N. J., and states that the commission already has passed upon every issue raised by the petition of the competing carrier. It draws the conclusion that the position now taken by the Pennsylvania is contrary to that it manifested at the hearing and during the argument of the case earlier in the year. At the hearing the Pennsylvania asserted that it filed its tariff with the commission for the establishment of a free transfer service throughout Manhattan, the Bronx, Brooklyn and Newark, N. J., because competition necessitated it. Following the filing of this tariff by the Pennsylvania, the New York Central and other lines protested the tariff and asked the commission to investigate the practices of the Baltimore & Ohio in this respect, but the commission denied the application for such investigation and, after the hearing, disapproved the tariff.

The history of the case is reviewed by the Baltimore & Ohio reply, which also stresses the point that the Pennsylvania, in seeking to re-open the question, has reversed itself since it now bases its contentions on what it claims is irregularity or illegality in the transfer service of the Baltimore & Ohio, whereas originally the Pennsylvania based its main argument for free transfer of passengers on the grounds of competition.

Salt Rate Hearings

The third of a series of Interstate Commerce Commission hearings on the general investigation of freight rates on salt was held at Dallas, Tex., on October 4 before Examiner Edward J. Hoy. Previous hearings were held at Chicago, Buffalo and Kansas City, and further hearings will be held at Atlanta and Chicago.

Effective Date of Rail-Water Rate Order Postponed

The Interstate Commerce Commission has again postponed, until February 24, 1931, the effective date of its order of April 8, 1929, requiring the railroads to join with the Inland Waterways Corporation in the establishment of joint through routes and joint rates.

Consolidator Opens New Pittsburgh Station

The Universal Carloading & Distributing Company has opened a new freight house at Eleventh and Pike streets, Pittsburgh, Pa., said to have cost \$500,000. The new station adjoins the freight station grounds of the Baltimore & Ohio.

Santa Fe Tour Available to Winter Travelers

The Atchison, Topeka & Santa Fe will make its Petrified Forest detour in Arizona available to passengers throughout the winter. This detour was opened on May 15, 1930, for passengers on the

Navajo, and on August 10, following the rerouting of this train, was made available instead for passengers on the Grand Canyon Limited.

Peoria & Pekin Union Observes Fiftieth Anniversary

The Peoria & Pekin Union has issued a booklet to commemorate the fiftieth anniversary of its incorporation. This company was formed on October 1, 1880. The booklet is subtitled, "Today and in Retrospect" and is a resume of the history, the progress, and the present standing of the Peoria & Pekin Union. It is illustrated throughout with photographs of officers and facilities of the railroad.

The C. N. R. in September

Gross revenues of the Canadian National for the month of September totaled \$20,856,948, as compared with \$24,145,026 in September, 1929.

Operating expenses were \$16,956,194, as compared with \$18,764,578; and net revenue \$3,900,753, as against \$5,380,447. The operating ratio was 81.30.

Gross revenues for the nine months to the end of September amounted to \$168,387,065; operating expenses were \$148,626,900, and net revenue \$19,760,164.

Sales of Single Occupancy Sections Increase

The Pullman Company's campaign to promote the sale of single occupancy sections by encouraging employees to induce patrons to occupy the entire section is continuing to meet with success. This is indicated by the reports for September which show a marked increase in the demand for this new unit of accommodation which is now averaging about 10,000 per week as against 1,600 per week this time a year ago. The figures for August disclose the fact that conductors not only increased their sale of single occupancy sections, but that they have also increased the number of upper berth sales over 25 per cent in excess of those for July.

Pelley to Address Insurance Presidents

John J. Pelley, president of the New York, New Haven & Hartford, will address the Association of Life Insurance Presidents at their convention to be held at the Hotel Astor, New York, on December 11-12. His subject will be "Railways and Other Ways." Other speakers from without the insurance field include Frank B. Noyes, president of the Associated Press, and Dr. Glenn Frank, president, University of Wisconsin.

Passenger Train Service Restored

The New York State Public Service Commission has ordered the restoration of passenger train service on November 3, on the Ausable Forks branch of the Delaware & Hudson. This branch, 23 miles long, in service since 1894, lost business so seriously that in September, 1929, the Public Service Commission authorized discontinuance of passenger trains. The motor coach line which has served the passenger traffic since that time has, however, been so far from satis-

factory that citizens have complained, and the present order is granted in response to these complaints.

The New York State Public Service Commission has ordered the New York, New Haven, & Hartford to restore immediately passenger train service between Poughkeepsie and Maybrook, 27 miles. At the same time the Commission announced its general purpose to order restoration pending hearings in all cases where railroads discontinue passenger service apparently referring to cases where such action is taken by the railroad without first having authority.

Illinois Central To Transport Autos for Passengers

The Illinois Central is planning to establish automobile transportation service for passengers to Mexico this winter. Under the plan, transportation for two passengers and one automobile will be provided when five regular one-way or round-trip tickets are purchased. The automobile will be shipped in advance of the passenger's departure to insure its receipt at the Mexican border by the time the passenger arrives. The service will begin on November 15.

Railway Club Meetings

The Railway Car Men's Club of Peoria and Pekin will hold its next meeting on Friday, November 21, at 7 p.m., in Room 38, Union Depot, Peoria, Ill. The discussion will be on the instructions covering inspection and classification of empty box cars at Peoria.

The Car Foreman's Association of Omaha, Council Bluffs, and South Omaha will hold its next meeting on Thursday, November 13, at 2 p.m. at Council Bluffs, Iowa. J. C. Rowe, superintendent of the Armour car shops, will present a paper on the relation of the railroads to the packing industry.

The Cincinnati Railway Club will hold its next meeting on Tuesday evening, November 11, at six o'clock, at Hotel Gibson, Cincinnati. Alex. Thomson, Jr., will exhibit a motion picture showing the manufacture of paper. This will be the annual dinner and election of officers.

British Accident Record, 1929

The report of the Ministry of Transport on railroad accidents in Great Britain in the year 1929, shows, in train accidents, three passengers, 14 employees and two other persons killed, and 507 passengers, 97 employees and 52 other persons injured. Trespassers and suicides are not included. The number of passengers killed (3) compares with 48 in the year 1928, and with 11 as the average yearly number in the ten years 1918-1927.

Adding train service accidents and non-train accidents, the total casualties were, in the year under review, 417 killed and 25,364 injured, as compared with 460 killed and 24,324 injured in 1928.

Minneapolis-Chicago Freight Service on 28½-hr. Schedule

The Minneapolis & St. Louis and the Illinois Central have established freight service from Minneapolis, Minn., to

Chicago on a schedule of 28½ hours. The new schedule is made possible by transferring freight from the Great Northern and Northern Pacific to the Minneapolis & St. Louis in the Minneapolis yards instead of by the Minnesota Transfer Railway. Cars now leave Minneapolis at 10 a.m. and arrive in Chicago at 2:30 the next afternoon. Cars reaching Minneapolis during the night and up to 8 a.m. can be handled on the new service.

Equipment Installed

Class I railroads in the first nine months of 1930 placed 70,033 new freight cars in service, the Car Service Division of the American Railway Association announces. In the same period last year, 59,929 new freight cars were placed in service. Of the new cars 36,404 were box cars, an increase of 8,119; coal cars numbered 25,785, an increase of 3,860; flat cars, 3,343; refrigerator cars, 3,425; stock cars, 738 and 338 miscellaneous. The railroads on October 1 had 6,764 new freight cars on order, compared with 29,481 on the same day last year, and 7,522 two years ago. Locomotives placed in service in the first nine months, 632, compared with 540. New locomotives on order on October 1 this year totaled 181 compared with 354 on the same day last year.

B. & M. Makes Peace With New Hampshire

The suit of the State of New Hampshire against the Boston & Maine for alleged violation of the New Hampshire law by removing or threatening to remove repair shops from that state, is to be withdrawn. Officers of the road and of the state have agreed that the legislature shall be requested to make a new law, requiring simply that repair and construction work in the locomotive and car departments shall be done in New Hampshire in proportion to the locomotive and car miles operated in that state as compared with such operations on the whole of the railroad company's system. The road proposes to expend \$450,000 for the modernization of its shops at Concord, N. H., which will be followed probably by the employment of 125 additional men at those shops.

C. P. R.'s Employment Aid Program

Details of the agreement made between the Dominion government and the Canadian Pacific, under which the company will engage in a program of construction designed to assist in giving employment, the interest on the expenditure to be advanced by the government, were announced at Ottawa last Saturday. A total estimated expenditure of \$11,514,000 is provided for, and the plans include construction of new lines, laying of track, and gravel and rock ballasting.

The list of works with their estimated cost is as follows: Laying track, Crossfield extension, 28 miles, \$361,000; laying track, Lacombe Northwestern extension, 22 miles, \$220,000; purchase and installation 150 miles heavy rail in British Columbia, \$2,530,200; purchase and installation 100

Boston & Maine Adopts New Employment Policy

The Boston & Maine has announced a new policy of employment by which jobs for approximately 200 additional men will be created at various locations on its system. This step to relieve unemployment, agreed upon by the railroad and the Boston & Maine Mechanical Employees Association, at the suggestion of the latter, will eliminate seven-day jobs in the mechanical department without increasing the expense of the railroad and will bring in new men on five- and six-day schedules. The policy will affect machinists, boilermakers, electricians, car men, mechanical inspectors and related employees, and is to be worked out immediately at Boston, Lawrence, Lowell, Ayer, East Deerfield, Worcester and Springfield, Mass.; Concord and Woodsville, N. H.; White River Junction, Vt., and Mechanicville, N. Y.

In carrying out the agreement it is understood that due consideration will be given to the requirements of the service, the necessity of maintaining a well-balanced force and the competency of the employees who are to fill such new positions as are created by the change.

miles heavy rail in Ontario, \$1,345,800; grade revision between Savona and Spencer Bridge, B. C., \$697,000.

Complete construction, new lines: Nipawin-Henribourg, 20 miles, \$600,000; Medstead-Meadow Lake, 35 miles, \$1,260,000; Regina Station, approaches and tracks, \$1,250,000; Rosetown-Gunworth, 20 miles, \$700,000; Dog Lake-Kettle Valley, nine miles, \$640,000; Hamlin-Shelbrook, 25 miles, \$900,000; gravel ballasting, New Brunswick district, 20 miles, \$60,000; rock ballasting, Lachute subdivision, 20 miles, \$125,000; rock ballasting, Galt subdivision, \$750,000; rock ballasting, Algoma district, 15 miles, \$75,000.

Mississippi Full-Crew Law

Four railroads operating in Mississippi, the Mobile & Ohio, the Yazoo & Mississippi Valley, the Southern and the New Orleans Northeastern, have been cited by the State Railroad Commission charged with violation of the full-crew law enacted by the legislature this year. A hearing in the cases will be held at Jackson, on November 4. The full-crew law, known as the Sillers-McGehee bill, provides that a steam propelled train must have a crew of not less than one engineman, one fireman, one conductor, one brakeman or porter and one flagman, while trains propelled by oil engines or electricity must have one engineman or motorman, one conductor and one baggageman or brakeman or flagman. An extra man must be added to the crew of the latter class of trains when they are

made up of more than three cars. The law provides a penalty of from \$100 to \$1000 for each offense.

A London Fog in America

Manhattan Transfer, the station on the Pennsylvania between Jersey City, N. J., and Newark, at which all passenger trains are stopped for a change of locomotives, from electric to steam or steam to electric, has experienced a genuine London fog; and it caused such congestion that large numbers of trains were delayed from 45 minutes to one hour and longer. It was on the morning of October 27, beginning at about five o'clock. The fog, combined with smoke from fires on the meadows, some distance away from the railroad and inaccessible to fire companies, remained motionless because of lack of wind; and hand signals could be seen but short distances. Men had to be stationed near fixed signals to give hand motions to enginemen.

A statement issued by the railroad company said that locomotive cab signals functioned properly (as did roadside signals) but not all locomotives in this region are equipped with cab signals; and for many yard movements the cab signal, of course, would be of no great benefit. To mitigate the delays and relieve congestion at Pennsylvania station in New York, resort was had in several cases to the combination of two trains in one in order to save time at the Transfer. The difficulties extended over three or four hours.

Trains of the Erie, the Delaware, Lackawanna & Western and the Central of New Jersey were also somewhat delayed. On the highways across the meadows hundreds of automobiles were greatly delayed, cars, three or four abreast, being obliged to crawl at a snail's speed for long distances. Many motorists suffered in their eyes and throats from the smoke.

High Monthly Passenger Locomotive Mileage

The Chicago & Eastern Illinois has averaged more active passenger locomotive miles per month for the first six months of 1930 than any road serving the Illinois-Indiana territory, according to J. B. Ford, vice-president of the road.

In comparing the average miles per active locomotive in service per month of a number of roads serving the Illinois-Indiana territory for the first six months of 1930 and the corresponding period of 1929, Mr. Ford said that the fact that the Chicago & Eastern Illinois ranks first is shown in the following figures.

	Average Miles Per Month	1930	1929
Chicago & Eastern Illinois	7,868	7,151	
Chicago, Indianapolis & Louisville	6,362	6,173	
Wabash	6,096	6,029	
Cleveland, Cincinnati, Chicago &			
St. Louis	5,835	5,702	
Chicago & Alton	5,608	5,836	
Pennsylvania	5,298	5,193	
Illinois Central	4,693	4,771	

"As a matter of fact," said Mr. Ford, "there are only eight Class I railroads in the United States to equal or exceed 7,000 miles per month per active passenger locomotive during the first six months of 1930. The Chicago & Eastern Illinois ranks fourth among these eight roads."

Figures on the first four roads in the United States are as follows:

	Average Miles Per Month	1930	1929
Union Pacific	8,709	8,436	
Florida East Coast	7,900	7,750	
Missouri-Kansas-Texas	7,895	7,680	
Chicago & Eastern Illinois	7,868	7,151	

The Michigan Central is fifth; Richmond, Fredericksburg & Potomac, sixth; Atchison, Topeka & Santa Fe, seventh; and the Los Angeles & Salt Lake, eighth.

While discussing the winter passenger service, Mr. Ford said:

"With the gradually improving business conditions, it is expected that the coming winter tourist season in Florida and along the Gulf Coast section will be the best in several years.

Seek Order on Automatic Connectors in Canada

At a hearing which occupied the entire week ended October 24 the Canadian Board of Railway Commissioners heard the plea of various railway employees' organizations for an order to make compulsory the installation of automatic train line connectors. C. P. Riddle, general secretary of the Canadian Railway Association, told the Board that tests of automatic connectors are at present being carried out at Purdue University under the direction of the American Railway Association in collaboration with the Bureau of Safety of the Interstate Commerce Commission and the Brotherhood of Railroad Trainmen.

A. C. Boyce, appeared for the Brotherhood of Railway Trainmen. Outlining the attitude of that organization toward the matter, he recalled that, in 1926, attention of the railways had been drawn to it while subsequent efforts had been made "to get to a point where this protection could be afforded." Up to date, however, nothing definite had resulted with the exception of one device, tested in February, 1929, which had failed to live up to the expectation of all concerned.

Mr. Boyce gave figures to show the loss of life among railway employees and injuries sustained in the duty of coupling and uncoupling trains. The Brotherhood insisted upon action by the Board. The delay on the part of the railways in installing such safety devices as automatic trainline connectors was unreasonable, Mr. Boyce said.

Mr. Riddle stated that tests were begun at Purdue University on September 29. Forty devices had been submitted. It would require one more year to arrive at any result. Up to the present, no automatic trainline coupler had been invented that would meet all conditions. Mr. Riddle emphasized the tremendous variations which an invention of this character would have to meet in order to be applicable to all railways.

There had been no unreasonable delay, he said, inasmuch as time was needed in order to equip the laboratories for the many tests that such devices would have to undergo.

The Canadian railways would be willing to adopt any such satisfactory device if standardization on all American railways could be achieved.

Mr. Boyce contended that the Purdue University experiments were "nothing more than a gesture, with the idea of delaying the testing out of mechanical devices for many years." He objected to Canadian railways being subjected to the decisions reached at "a foreign university."

W. A. Newman, chief mechanical engineer of the Canadian Pacific observed that the C.P.R. had conducted many experiments on its own initiative; but these had had to be done on sections of line which were isolated and where the cars were not interchanged with other railways.

New York Central Seeks Increase in Commutation Fares

Announcement of intention to ask for an increase of forty per cent in commutation fares on the New York Central, in and out of Grand Central Terminal, in the New York zone has been made by L. F. Vosburgh, vice-president, passenger traffic.

The New York Central's present suburban fares are materially lower than those in effect on any other railroad entering New York. The increase sought would be the first since 1918. The announcement reads in part as follows:

"The commutation business of the New York Central, in and out of New York City, has increased rapidly and continuously in recent years to such an extent, that at present that business constitutes, in the number of passengers carried, 65 per cent of the total number of passengers carried; but the revenue received from this 65 per cent of total number of passengers, constitutes but 8 per cent of the total passenger revenue.

"The expense of providing the commutation service is far in excess of the revenue derived from it. During the last five years, expenditures for additional track and platform facilities, passenger station improvements, additions to the electric transmission, and distribution system, and new rolling stock, all directly attributable to the demands of the commutation service, have been approximately \$20,000,000.

"The company is now engaged in increasing the track capacity between Mott Haven Junction and Grand Central Terminal, solely because of the demands of the commutation business—an added expense of several million dollars in addition to the \$20,000,000 above mentioned. Although in August, 1920, the Interstate Commerce Commission authorized an increase in interstate commutation fares of 20 per cent, this did not apply to such fares in and out of the Grand Central Terminal.

"Increases in commutation fares have been authorized since that time in various parts of the country by state boards and by the Interstate Commerce Commission, but such fares of the New York Central in and out of the Grand Central Terminal have remained unchanged since 1918. These fares are materially lower than those in effect on any other of the railroads entering New York City. The company believes that it can confidently state that its commutation service com-

pares favorably with that of any other similar service on any other line.

"It is therefore the intention to apply to the proper authorities for an increase of 40 per cent in the monthly commutation, 46-trip school, and 50-trip family fares, together with a proportionate increase in suburban excursion ticket fares."

The proposed increase would put rates on substantial parity with rates on the New Haven Road in Westchester County.

Bridge and Building Supply Men's Exhibit

Fifty-one manufacturers of materials and equipment used in the construction and maintenance of railway bridges, buildings and water service facilities, presented an exhibit in the Brown Hotel, Louisville, Ky., October 21-23, coincident with the convention of the American Railway Bridge and Building Association. This exhibit consisted primarily of literature describing the various products. It was presented under the auspices of the Bridge and Building Supply Men's Association of which W. D. Waugh, Detroit Graphite Company, St. Louis, Mo., was president; I. B. Tanner, Nelson Water Service Company, Chicago, vice-president; B. J. Wilson, Pocket List of Railroad Officials, Chicago, treasurer, and W. H. Lawrence, Johns-Manville Sales Corporation, New York, secretary.

At the annual meeting Mr. Tanner was elected president and Mr. Lawrence vice-president, while Mr. Wilson was re-elected treasurer. S. A. Baber of the High Grade Manufacturing Company, Cleveland, Ohio, was elected secretary. J. W. Shoop, the Lehon Company, Chicago, and W. W. Patterson, Jr., of the W. W. Patterson Company, Pittsburgh, Pa., were elected directors for a three-year term to serve with E. G. Whitmore, the De Vilbiss Company, Toledo, Ohio; B. S. Spaulding, Fairbanks, Morse & Co., Chicago; E. E. Kelly, the Celotex Company, Chicago; and C. E. Roscoe, the C. A. Dunham Company, Chicago, whose terms expire at succeeding conventions.

The companies participating in the exhibit and the names of their representatives follows:

American Company of America, Pittsburgh, Pa.; aluminum paint; conduit; aluminum shapes, nails, rivets and screws; literature on aluminum products; Carl E. Miller, A. B. Anderson, W. B. Roberts.

American Hoist and Derrick Company, St. Paul, Minn.; literature and photographs of locomotive pile drivers, derricks, crawler cranes, locomotive cranes, railroad and locomotive ditchers; Wm. M. Schoen, Miss H. M. Hoeller, S. M. Bryant, J. L. Prayter.

American Railway Hydrant & Valve Co., New York; hydrants and valves. W. Volkhardt.

American Rolling Mill Company, Middletown, Ohio; samples and literature on ingot iron; H. M. Arrick, R. C. Beam, W. W. Graham, R. Y. Barham.

American Valve and Meter Co., Cincinnati, Ohio.

Barrett Company, New York; roofing, shingles, carbosota creosote oil, tarvia-lithic pavement and waterproofing; F. N. Nichols, J. E. Haynes.

Binks Mfg. Co., Chicago; paint spraying equipment; literature, J. E. Schabot.

Carter Bloxond Flooring Company, Kansas City, Mo.; samples of wood block flooring; literature and photographs. L. L. Bucklew, C. E. Emmert.

Celotex Company, Chicago; Celotex products and literature; E. E. Kelly, J. H. Bracken, D. J. Carmouche.

Chicago Bridge & Iron Works, Chicago; literature and photographs of steel water tanks.

Clyde Iron Works, Duluth, Minn.; literature and photographs of railway construction equipment. R. G. Luster.

Concrete Materials Corporation, Chicago; patch cement, waterproofing; E. C. Otte.

Curtin-Howe Corporation, New York; literature on Z M A wood preservative; F. S. Shinn, A. E. McDougall.

Dearborn Chemical Company, Chicago; literature; Charles F. Barham, Jr., Paul T. Payne, S. E. Moore.

Detroit Graphite Company, Detroit; literature on paint; W. D. Waugh, L. F. Flanagan, A. B. Edge, Neil Wright.

DeVilbiss Company, Toledo, Ohio; paint spray systems; E. G. Whitmore, J. W. Savage, M. M. Murphy.

Paul Dickinson, Inc., Chicago; caboose jacks, cast iron chimneys, roof ventilators, deck and roof drains and cast iron exhaust heads; A. J. Filkins, A. E. Engman, K. T. Batchelder.

Duff-Norton Manufacturing Company, Pittsburgh, Pa.; jacks; C. N. Thulin, Albert Roberts, E. E. Thulin.

C. A. Dunham & Co., Chicago; valves, traps, unit heaters, photographs of steam heating installations; C. E. Roscoe.

Fairbanks, Morse & Co., Chicago; F. M. Condit, C. H. Wilson, B. S. Spaulding, H. J. Smith, D. K. Lee, E. J. Coverdale, H. E. Vogel, H. L. Hilleary.

Fairmont Railway Motors, Inc., Fairmont, Minn.; Kenneth Cavin.

Federal Cement Tile Co., Chicago; cement roofing tile and cribbing; literature; H. M. Butters.

Hastings Signal & Equipment Company, Boston, Mass.; tell-tales; R. W. Hastings, Harry H. Naylor.

High Grade Manufacturing Company, Cleveland, Ohio; literature and samples of fibre cement; S. A. Baber, J. N. Kinn.

Ingersoll-Rand Company, New York, literature on compressed air equipment for bridge and building work; G. W. Morrow, D. C. Peacock.

Ingot Iron Railway Products Company, Middleboro, Ohio; corrugated culvert with protective coating; literature on drainage; T. Scott, E. T. Cross.

The Insulite Company, Minneapolis, Minn.; samples of insulite; Jack Frost, D. D. Grasick.

International Derrick & Equipment Co., Columbus, Ohio; section of standardized insulated metal building; C. Stein.

Johns-Manville Sales Corporation, New York; roofing and building materials, pipe and boiler insulation, waterproofing, industrial flooring and smoke jacks; W. H. Lawrence, A. C. Pickett, B. J. Queen.

Jones Paint Company, Rome, N. Y.; liquid and plastic roofing cement; A. de Wolfe Jones, L. V. Jones.

The Kaustine Company, Inc., Perry, N. Y.

The Lehon Company, Chicago; samples of roofing, waterproofing membrane, shingles, waterproofing and roof coatings, and asphalt emulsion; Tom Lehon, J. W. Shoop, H. A. Wolfe.

Lewis Asphalt Engineering Corporation, New York.

Chas. R. Long, Jr. Company, Louisville, Ky.; literature and panels on paint products; Chas. R. Long, Jr., Wiley B. Bryan, M. H. Oakes, K. E. Clarke.

Louisville Frog, Switch & Signal Co., Louisville, Ky.; reflector switch lamps and signs; F. W. Carter, J. S. Drillette, J. E. Butler.

Massey Concrete Products Company, Chicago; literature on reinforced concrete culvert pipe cribbing and piling, also photographs; David A. Hultgren, J. A. Higgs, W. L. McDaniel.

Midland Company, South Milwaukee, Wis.; door hangers; literature, R. A. Nourse.

Murdock Mfg. & Supply Co., Cincinnati, Ohio; railway water service boxes and air valves; J. C. Endebeck, J. C. Endebeck, Jr. National Boiler Washing Co., Chicago; F. W. Gale.

National Lead Company, New York; literature on red and white lead; F. E. Dodge, Francis M. Hartley, Jr., Prof. A. H. Sabin.

Nelson Water Service Co., Chicago; literature; John E. Tanner, I. B. Tanner.

Ohio Valley Rock Asphalt Co., Louisville, Ky.; J. B. Wilson, George W. Rapp.

W. W. Patterson Co., Pittsburgh, Pa.; tackle blocks for wire cable and manila rope; W. W. Patterson, Jr.

Phelps Drake Co., Inc., Minneapolis, Minn. **Pittsburgh-Des Moines Steel Company**, Pittsburgh, Pa.; photographs and literature on steel water tanks and treating plants; A. B. Sanderson, Jr., J. L. Dailey, W. R. Workman, J. E. O'Leary.

Pittsburgh Plate Glass Company, Newark, N. J. (Paint and Varnish Division); paints, varnish and literature; C. S. Gush, F. A. McEvay.

Pocket List of Railroad Officials, New

York; copies of pocket list of railroad officials; B. J. Wilson.

Railway Age, Chicago; copies of *Railway Age* and *Railway Engineering and Maintenance*; Elmer T. Howson, J. G. Little, F. C. Koch.

The Ruberoid Company, New York. **The Sherwin-Williams Company**, Cleveland, Ohio; Arthur Larkins.

U. S. Wind Engine & Pump Company, Batavia, Ill.; literature on tanks, steel towers, water columns and tank fixtures; C. E. Ward.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, May 19-22, 1931, Royal York Hotel, Toronto, Ont. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—A. G. Peck, Acting Secretary, 811 W. 35th Street, Kansas City, Mo. Next meeting June 16-19, 1931, St. Louis, Mo.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—J. H. Hawley (B. R. & P. Ry.) E. Salamanca, N. Y. Next convention December 8-10, 1930, New Orleans, La.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Next convention, September 28-October 2, 1931, Atlantic City, N. J.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y. Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section. — R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section.—J. C. Caviston, 30 Vesey St., New York.

Safety Section.—J. C. Caviston, 30 Vesey St., New York.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, September, 1931, Chicago.

Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.

Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 10-12, 1931, Palmer House, Chicago.

Electrical Section.—E. H. Fritch.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York.

Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago. Next meeting, June, 1931.

Equipment Painting Section.—V. R. Hawthorne, 59 East Van Buren St., Chicago.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago. Next meeting, May 26-29, 1931, Louisville, Ky.

Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York, N. Y. Next meeting, November 11-13, 1930, Hotel Stevens, Chicago.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agt., C. R. I. & P. Ry., Chicago, Ill. Semi-Annual meeting, December 4-5, 1930. Hotel Sherman, Chicago. Annual meeting, 1931, Philadelphia, Pa.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss E. Phillips, N. Y., N. H. & H. Magazine, New Haven, Conn. Next meeting, June, 1931, Philadelphia, Pa.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Next convention, September, 1931. Exhibit by Supply Association of the American Railway Tool Foremen's Association. E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Assistant Secretary, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 27-29, 1931, Philadelphia, Pa.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, June 17-19, 1931, Royal York Hotel, Toronto, Ont.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucci, C. & N. W., Room 411, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. F. Gettrust, Ashton Valve Company, 565 Washington Blvd., Chicago. Meets with International Railway General Foremen's Association.

BOILERMAKERS' SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. H. Lawrence, Johns-Manville Corp., 41st St. and Madison Ave., New York. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 208 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago. Exhibit by Supply Men's Association.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, 3001 W. 39th Place, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Regular meetings, second Monday of each month, except July, August and September, Room 299, 610 So. Main St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Hotel Annex, 6th and Market Sts., St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—T. J. O'Donnell, 1004 Prudential Building, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 453 E. 6th St., Cincinnati, Ohio. Meetings 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit of International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—J. H. Jones, Crucible Steel Company of America, 650 Washington Blvd., Chicago. Meets with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700 La Salle Street Station, Chicago. Next meeting March 30-April 1, 1931, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. M. Huffman, Dearborn Chemical Co., 310 So. Michigan Ave., Chicago. Meets with International Railway Fuel Association.

Stiglmeier, 29 Parkwood St., Albany, N. Y. Next convention, May 12-15, 1931. Hotel Sherman, Chicago. Exhibit by Boiler Makers' Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—(See Car Department Officers' Association.)

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual Convention, November 12-15, 1930, Francis Marion Hotel, Charleston, S. C.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. L. Walsh, Supt. Safety, M.-K.-T. R. R., Dallas, Tex.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. I. McKay, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C. Annual convention, 1931, Mexico City, Mex.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1112 Shoreham Building, Washington, D. C. Next meeting, November 19, 1930, Commodore Hotel, New York, N. Y.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meeting, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Store Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Next convention, September 22-24, 1931, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Fraenthal, Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—K. G. Parks, A. B. & C. Ry., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Inc., 667 The Rookery Building, Chicago. Meets with Car Department Officers' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Next convention March 25-28, 1931, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 343 So. Dearborn St., Chicago. Regular meetings 3rd Monday each month, except June, July and August.

Equipment and Supplies

Locomotives

THE CHICAGO GREAT WESTERN has ordered six locomotives of the 2-10-4 type from the Lima Locomotive Works. These are in addition to the 15 ordered from the same builder in December, 1929, and the 15 ordered from the Baldwin Locomotive Works in August of this year.

Freight Cars

THE BALTIMORE & OHIO has ordered 1,000 box cars from the Standard Steel Car Company.

THE ATCHISON TOPEKA & SANTA FE is expected to enter the market for 2,500 freight cars.

THE VIRGINIAN is asking prices for the rebuilding of 500 hopper cars of 55 tons' capacity.

THE PACIFIC FRUIT EXPRESS is inquiring for 600 steel underframes for refrigerator cars.

THE HERCULES CEMENT CORPORATION has ordered 10 cement cars from the Standard Steel Car Company.

THE WHEELING STEEL CORPORATION has ordered repairs to be made to 20 gondola cars in the shops of the Pressed Steel Car Company.

THE ILLINOIS TERMINAL RAILROAD SYSTEM has ordered 15 steel underframes for freight cars from the American Car & Foundry Company.

THE FERROCARRIL AL PACIFICO is inquiring for 25 cattle cars. Miguel A. Castro is general purchasing agent, San Jose, Costa Rica.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE, which is constructing 200 box cars in its own shops, has completed the construction of 175 and will have the remaining 25 constructed by November 1.

THE CHICAGO, ROCK ISLAND & PACIFIC, as of October 1, has constructed 51 gondola cars in its own shops, thereby leaving 193 still to be constructed in accordance with its program which called for the construction of 244 gondola cars to be built in company shops during 1930. The work will be completed as soon as the company resumes shop operations, the necessary material being on hand. In addition to the 51 gondola cars, this company has constructed 75 caboose cars at its Blue Island, Ill., shops this year.

Pennsylvania to Build 1,500 Freight Cars

Nearly 600 Pennsylvania employees, most of whom are now on furlough, will begin work within two weeks on the construction of new steel cars costing about \$5,000,000. All of these new cars

will be built on the Pennsylvania's own shops.

The five million dollar order involves the immediate construction of 1,500 steel gondola cars 65 ft. long with a carrying capacity of 74 tons each; they are especially designed for transporting structural steel, pipe, and open shipments of automobiles.

Construction of the 1,500 cars will require 93,000,000 pounds of steel and steel products.

Five hundred of the new steel cars will be constructed at the Pennsylvania's Enola steel car shops near Harrisburg, 500 at the Pitcairn steel shops, Pittsburgh district, and 500 at Altoona Works, at Altoona, Pa.; 300 men now on furlough will be called back to work at the Enola and Pitcairn shops. Approximately 150 men will continue at full time on the construction schedule for Altoona Works, in addition to 137 men who will be placed on an approximately full-time schedule in the fabricating shops in connection with the new car order.

The assembly of material is being started at once and it is expected that fabrication will be undertaken within the next few weeks. Delivery of cars for service is expected to be started at the rate of approximately 20 a day within the next 30 days.

Passenger Cars

THE NEW YORK CENTRAL is inquiring for 20 multiple unit car bodies and trucks.

Iron and Steel

THE CANADIAN NATIONAL is asking for prices on 1931 United States requirements of rails and track fastenings.

THE CHICAGO & NORTH WESTERN has ordered 15,000 tons of rails, 10,000 tons being placed with the Illinois Steel Company and 5,000 tons with the Inland Steel Company.

THE BALTIMORE & OHIO is arranging for 75,000 tons of steel rail for 1931 delivery. The rails and track fastenings will be delivered during the first five months of 1931 and the order represents an ultimate expenditure of \$4,800,000. Details regarding weight of rail and distribution of orders have not yet been concluded.

Signaling

THE MISSOURI PACIFIC has ordered from the General Railway Signal Company an electric interlocking for Carroll street, St. Louis, Mo.; 57 working levers.

THE TORONTO TERMINAL.—The contract of the General Railway Signal Company for installation of signaling at this terminal has been amended to include 15 added levers, to control functions distant from the tower 2,500 ft. to 4,000 ft.

Supply Trade

Welding Engineering & Research Corporation

Comfort A. Adams, who has been elected president of the Welding Engineering & Research Corporation to succeed William T. Kyle, resigned, is also chairman of the technical board. This new organization was formed to engage in engineering, research, consulting, inspection, supervision and certification, with headquarters at 25 West Forty-third street, New York City. Dr. Adams is professor of engineering at Harvard University and also consulting engineer for several large corporations. He

chairman of the Engineering division of the National Research Council. He is also a member of a number of engineering and technical associations both in the United States and abroad.

James W. Owens, secretary and director of engineering of the Welding Engineering & Research Corporation and a member of its board of directors, has a wide technical and practical experience in the welding and cutting processes in many branches of the metal industry. For the past four and



Comfort A. Adams



J. H. Deppeler



James W. Owens



Charles A. McCune

dent from 1920 to 1922; Mr. Owens is the recipient of its Miller Memorial medal for 1929. He is the author of *Fundamentals of Welding Gas, Arc and Thermit*, and a member of a number of electrical and technical societies.

J. H. Deppeler, vice-president of the Welding Engineering & Research Corporation, is also chief engineer and works manager of the Metal & Thermit Corporation and a director of some of its subsidiaries. Prior to 1912 when he joined the Thermit Corporation, he was engaged in research work in the development of oxy-acetylene apparatus and practices. He was the second president of the American Welding Society and subsequently a member of its executive and many of its technical committees.

Charles A. McCune, treasurer and director of research of the Welding Engineering & Research Corporation is also a director of the corporation. He served in 1905 as assistant engineer and later as chief engineer of the Commercial Acetylene Company and assisted in the development of cylinders used for safely storing acetylene. In 1916 he went to the Page Steel & Wire Company and also served as a member of the Emergency Fleet Welding Committee. He is one of the founders of the American Welding Society and since 1919 served as chairman of the Welding Wire Specifications Committee of the American Bureau of Welding and in 1922 was elected president of the society. At present he is treasurer of the same organization having held that position since 1923. He is also president of the International Acetylene Association, and a member of many technical associations and will be chairman of the Welding Committee at the Chicago World's Fair Exposition in 1933. He has always taken an active part in technical committee work and has made a number of contributions on the properties of filler metal, as well as assisting in the preparation of text books on welding. Mr. McCune has relinquished the office of director of research of the American Chain Company which he has held for the past six years to direct the research activities of the new organization.

The technical board of the corporation also includes Dr. Ancel St. John, L. S. Moisseiff and A. V. DeForest, consultants.

George S. Chiles, chief mechanical engineer of the Scullin Steel Company, St. Louis, Mo., has resigned, effective November 15.

A. H. Armstrong, assistant engineer of the railway department of the General Electric Company for many years, and more recently chairman of the railroad electrification committee, and consulting engineer for the transportation department, has retired from the General Electric Company and has established a private consulting engineering office at 16 Troy Road, Schenectady, N. Y. Mr. Armstrong has made numerous studies of railroad electrification projects. He was connected with the electrification work on the Chicago, Milwaukee, St.

served as the first president of the American Welding Society, and has been a director of the American Bureau of Welding since its organization in 1919. During the World War he was chairman of the general engineering committee of the Council of National Defense, also of the welding committee of the Emergency Fleet Corporation. He is a past president of the American Institute of Electrical Engineers, first chairman of the American Engineering Standards Committee, now the American Standards Association, and past

one-half years he was director of welding at the Newport News Shipbuilding & Dry Dock Company and was consultant for a number of industrial concerns; for the eight years previous to that service he was welding aid in charge of welding research and development for the Bureau of Construction and Repair of the United States Navy, at Norfolk Navy yard. He served as a member of the Emergency Fleet Welding Committee during the World War and was one of the organizers of the American Welding Society having been its vice-presi-

Paul & Pacific, the Butte, Anaconda & Pacific, the New York Central and other electrifications. He was graduated from Worcester Polytechnic Institute in 1891, and entered the employ of the Thomson-Houston Company at Lynn, Mass., in the same year. He joined the railway engineering department of the General Electric Company in 1897, and since that time has devoted most of his time to the study of railroad problems. Mr. Armstrong has contributed much original material to textbooks on the subject of electric traction and in papers before various technical societies.

The Federal Cement Tile Company, Chicago, has acquired the **American Cement Tile Manufacturing Company**, Pittsburgh, Pa., and will merge the two companies under a name to be decided later.

The J. S. Coffin, Jr., Company is now located in its new plant at Englewood,

N. J. The new building is of steel and brick construction, and modern in every detail. In this plant the manufacturing, assembling, testing, stores and shipping departments of the company will be concentrated.

Obituary

C. A. Irwin, vice-president of the Alpha Portland Cement Company, Chicago, died suddenly on October 29.

A. F. Gartz who retired as treasurer of the Crane Company in 1905, died on October 29 in Altadena, Cal., following a heart attack.

CAMDEN FORGINGS.—The manufacture of Camden equalizers, drawbars and similar forgings is illustrated and described in detail in the new eight-page bulletin of the Camden Forge Company, Camden, N. J.

Railway Finance

CHICAGO & EASTERN ILLINOIS.—*Control*.—It is reported that the Van Sweringens have exercised their option to purchase a controlling interest in this road from the estate of the late Thomas F. Ryan.

GREAT NORTHERN.—*Notes*.—The Interstate Commerce Commission has authorized this company to guarantee \$500,000 of promissory notes of the Cottonwood Coal Company.

ILLINOIS CENTRAL.—*Abandonment*.—The Interstate Commerce Commission has authorized the Sunflower & Eastern to abandon and the Yazoo & Mississippi Valley to abandon the operation of the Sunflower's line extending from Parchman, Miss., easterly to Webb, 11.7 miles.

MISSOURI PACIFIC.—*Unification Case Re-Opened*.—The Interstate Commerce Commission has re-opened the case in which it has expressed approval, subject to certain conditions, of the lease by this company or 22 affiliated and subsidiary roads, for further argument on the questions of the maintenance of existing routes and of the location of the general offices and shops of the International-Great Northern at Palestine, Tex. This action was taken in response to petitions filed by the Kansas City Southern, the Texarkana & Fort Smith, the Missouri-Kansas-Texas, the Burlington-Rock Island, Anderson county and the city of Palestine.

NEW ORLEANS PUBLIC BELT.—*New Commissioner*.—The mayor of New Orleans, La., has appointed J. E. Menefee as a member of the commission which supervises this railroad for the city, succeeding Allen Mehle.

PENINSULA TERMINAL.—*Operation*.—The Interstate Commerce Commission has authorized this company to operate its 2.2-mile line in the North Portland, Ore., industrial district heretofore operated

under lease by the Oregon-Washington and the Spokane, Portland & Seattle.

PENNSYLVANIA.—*Acquisition and Operation*.—The Interstate Commerce Commission has authorized the Sharpsville Railroad to abandon its line from Sharpsville, Pa. to Wilmington Jct., 16.7 miles, together with a 1.2 mile branch line. This company is in receivership, its capital stock being owned 51 per cent by the Baltimore & Ohio and 48.6 per cent by the Pennsylvania. The Erie & Pittsburgh (a P.R.R. subsidiary) has been authorized to acquire and the P.R.R. to operate a 1.99 mile portion of the line to be abandoned and the Western New York & Pennsylvania (also a P.R.R. subsidiary) has been authorized to acquire and the P.R.R. to operate a 2.8 mile section of the line to be abandoned.

WACO, BEAUMONT, TRINITY & SABINE.—*Receivers Certificates*.—The Interstate Commerce Commission has authorized this company to issue \$100,000 of receivers certificates, series A, to bear interest at the rate of 6 per cent.

Average Prices of Stocks and of Bonds

	Oct. 28	Last week	Last year
Average price of 20 representative railway stocks.	99.40	96.78	126.78
Average price of 20 representative railway bonds.	94.28	94.78	91.38

Dividends Declared

Central R. R. of New Jersey.—\$2.00 quarterly, payable November 15 to holders of record November 3.

Hudson & Manhattan.—Common, \$1.75, payable December 1 to holders of record November 15.

Illinois Central.—Common, \$1.75, quarterly, payable December 1 to holders of record November 7.

Norfolk & Western.—Common, \$2.50, quarterly; Extra, \$2.00, both payable December 19 to holders of record November 29.

Pennsylvania.—\$1.00, quarterly, payable November 29 to holders of record November 1.

Construction

ALGERS, WINSLOW & WESTERN.—The Interstate Commerce Commission has authorized this company to construct a 4.2-mile extension in Pike County, Ind., to connect with the 1.5-mile line of the Enos Coal Mining Company and to operate the line of this latter company.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Sharp & Fellows, Los Angeles, Cal., for the construction of a branch line from Heaton, Tex., southwest to a point 8½ miles distant.

ATLANTA & ST. ANDREWS BAY.—This company has applied to the Interstate Commerce Commission for authority to build an extension of 4½ miles at Panama City, Fla., from Millville Junction to Bay Harbor.

BOSTON & MAINE.—The Public Service Commission of New York has advised this company that it does not consider excessive the bid of the Union Signal Construction Company in the amount of \$54,000 for work in connection with the elimination of the West street crossing near Johnsonville station in Pittstown, N. Y. The commission has directed the railroad to award the contract and begin the work as soon as practicable.

CANADIAN PACIFIC.—Tenders for driving a tunnel from Burrard Inlet at Vancouver to its yards at Flase Creek to eliminate six street crossings and for placing a two foot reinforced concrete lining will be received by this company until December 1. The tunnel will be 4,609 ft. long, total construction costs are estimated at \$1,750,000.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—A contract has been let to the Industrial Construction Company for the construction of a highway grade separation structure at Forty-first street, Cleveland, Ohio, at a cost of about \$200,000.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract for the construction of a building which will house a waste reclamation plant at Milwaukee, Wis., for the extraction of oil and grease from used journal box waste has been awarded to Bently Brothers, Inc., Milwaukee. A contract has been let to the Journal Box Servicing Corporation, Indianapolis, Ind., for the equipment to be employed in the renovation process. The total cost of the plant will be about \$100,000.

DELAWARE, LACKAWANNA & WESTERN.—The Public Service Commission of New York has approved detailed plans for the elimination of the Adams street crossing of this railroad and the Castle Creek-Whitney Point highway about one mile southeast of Whitney Point station in the town of Barker, N. Y. Also plans have been approved for the elimination of another crossing on the Lackawanna located on Gulf Bridge County highway

at Chenango Forks station in the town of Chenango, N. Y.

LEHIGH VALLEY.—This company has been directed by the Public Service Commission of New York to prepare descriptions and maps of land and easement rights required in connection with the elimination of its crossing located on the Willard-Geneva highway about one mile north of Kendaria station in the town of Varick, N. Y., and its Romulus road crossing in the towns of Varick and Romulus, N. Y.

LOUISVILLE & NASHVILLE.—A contract has been let to the Johnson Construction Company, Birmingham, Ala., for the construction of a yard office, a service building and a signal tower at Birmingham.

MISSOURI PACIFIC LINES.—A contract for the construction of a one-story brick, tile and reinforced concrete warehouse at McAllen, Tex., has been let to the W. A. Velten Construction Company, Brownsville, Tex.

NEW YORK CENTRAL.—The New York Public Service Commission has designated for elimination the North Main street crossing of the New York Central at a point about 500 ft. west of Jordan station in the town of Elbridge, Onondaga County, N. Y.

NEW YORK CENTRAL.—This company has undertaken the construction of new facilities at Stanley Yard, Toledo, Ohio, at a cost of about \$1,400,000, which will convert an existing flat freight yard at that point into a hump yard with car retarder operation. A contract has been awarded to the Walsh Construction Company, Davenport, Iowa, for the grading and track construction. This project will involve the construction of a new northbound receiving yard of eight tracks of 110 cars capacity each, south of the present flat yards K and L; the conversion of the present flat yards K and L (26 tracks) to hump operation by rearranging and changing the grade; the addition of 16 tracks to yards K and L, and connection with the hump to provide a hump classification yard of 42 tracks, ranging in capacity from 22 to 95 cars each. This hump will be completely equipped with retarders and switch machines. The entire project is planned for completion by March 1, 1931.

NEW YORK CENTRAL.—The Public Service Commission of New York has designated for elimination the Brutus street crossing of this railroad located just east of Weedsport station in the town of Brutus, N. Y. The elimination will be effected by raising the grade of the highway and carrying it over the tracks. The estimated cost of the elimination is \$189,000, exclusive of land damages. The North Main street and Mud Mill road crossings in the village of Newark, N. Y., were also designated for elimination. This latter will involve closing of the crossings, carrying North Main street over the present grade of the railroad and diverting traffic from Mud Mill road to North Main street over a lateral highway to be constructed on the north side of the railroad. Also the

Public Service Commission amended its 1930 grade crossing elimination program by adding to the list of crossings to be considered for elimination the Benson crossing of the New York Central in the town of Amenia. It is estimated that this elimination will cost \$100,000, of which the railway would pay \$50,000, the state \$49,000, and the county \$1,000.

PENNSYLVANIA.—The Public Service Commission of New York has advised this road that it does not consider excessive the bid of \$88,332.88 submitted by the Bates & Rogers Construction Company, New York, for work in connection with the elimination of the Castile road crossing located just west of Portageville station in the town of Genesee Falls, N. Y. The bid was the lowest of 10 received and the railroad has been directed to award the necessary contract.

PENNSYLVANIA.—This company will begin immediately the construction of a new produce terminal at Baltimore, Md., at a cost of \$750,000. Construction plans call for completion of the new terminal about May 1, 1931. Superseding the Pennsylvania's present Bolton Station yard, the new produce terminal will occupy approximately five acres of ground on the site of the old Mt. Vernon shops. The shop buildings and power plant, which are located near the heart of the city adjoining Mt. Royal and North avenues, will be torn down at once to make way for the new terminal. The capacity of the proposed produce yards will practically double that of the present facilities. With eight 2,300-ft. team tracks, the new yard can accommodate 325 cars. Sixty-foot concrete driveways will separate each pair of tracks, allowing ample room for motor truck movement. One of the features of the new produce yard will be a modern brick office and warehouse, covering 45,000 sq. ft. The entire first floor will be given over to display space for fresh fruit and vegetables, where the receivers will exhibit fresh produce received each morning. The second floor will be available for office and auction facilities. The building will contain the Pennsylvania produce terminal offices and space will be available for about 25 offices for produce dealers.

PITTSBURGH, SHAWMUT & NORTHERN.—The Public Service Commission of New York has approved plans and estimates of cost in connection with the reconstruction of the bridge carrying this railway over the Belvidere-Transit Bridge-Angelica County highway in the town of Angelica, N. Y.

SPOKANE, PORTLAND & SEATTLE.—A contract has been let to the Hauser Construction Company, Portland, Ore., for track laying for the 29-mile extension of the Oregon Electric from Lebanon, Ore., into the Calapooia valley. A contract for ballasting has been awarded to the Meyers Contracting Company.

TERMINAL RAILROAD ASSOCIATION.—The Illinois Commerce Commission has granted this railroad permission to construct a new union station with accompanying facilities at South Main street, East St. Louis, Ill., at a cost of about \$700,000.

Railway Officers

Financial

Charles F. Groves, secretary of the Central of Georgia, Wrightsville & Tennille, Wadley Southern, Louisville & Wadley and the Sylvania Central, has also been appointed treasurer of these companies, succeeding **W. C. Askew**, who will retire under the pension regulations.

Operating

C. A. Johnston, division engineer of the Wabash at Montpelier, Ohio, has been promoted to superintendent of the Detroit division with headquarters as before at Montpelier.

G. A. Briggs, superintendent of freight claim prevention, Grand Trunk Western, with headquarters at Detroit, Mich., has been appointed trainmaster in charge of the Pontiac terminal and Jackson and Cass City subdivisions with headquarters at Pontiac, Mich. The office of superintendent of terminals at Pontiac formerly occupied by **D. T. Crawford**, deceased, has been abolished. **V. C. Palmer** has been appointed superintendent of freight claim prevention succeeding Mr. Briggs.

Effective October 18, the position of passenger trainmaster in the Central Region of the Pennsylvania was abolished and the title of freight trainmaster has been changed to trainmaster with jurisdiction over both freight and passenger operation. **R. S. Foulk** has been appointed assistant trainmaster of the Pan Handle division and **F. A. Kennedy** to a similar position on the Buffalo division. Both will have charge of passenger operations on their particular divisions.

M. Ramtirez, superintendent of the Torreon division of the National of Mexico, with headquarters at Torreon, Coah., has been transferred to the Aguascalientes division, with headquarters at Aguascalientes, Ags., succeeding **P. M. Hernandez**, who has been transferred to the Torreon division. **Rafael Mora** has been appointed assistant superintendent of the Aguascalientes division. **M. S. Mayagoitia** has been appointed acting superintendent of the Pacifico division, with headquarters at Acambaro, Gto., to serve during the illness of **Miguel G. Navarro**, superintendent, who was confined to the hospital on October 6.

The Chicago, Milwaukee, St. Paul & Pacific has combined the Chicago and Milwaukee, the Racine and Southwestern and the Northern divisions into one division to be known as the Milwaukee division, comprising 651 miles of lines. **N. A. Ryan**, superintendent of terminals at Milwaukee, Wis., has been transferred to the new Milwaukee division with headquarters at the same point.

H. F. Gibson, superintendent of the Kansas City division with headquarters at Ottumwa, Iowa, has been transferred to the Milwaukee terminals succeeding Mr. Ryan. **G. H. Hill**, superintendent of the former Chicago and Milwaukee division, with headquarters at Milwaukee has been transferred to the Trans-Missouri division with headquarters at Miles City, Mont., succeeding **H. M. Gillick** who has been transferred to Hastings and Dakota division with headquarters at Aberdeen, S. D. Mr. Gillick replaces P. H. Nee who has been transferred to the Kansas City division to succeed Mr. Gibson. **N. P. Thurber**, superintendent of the former Racine and Southwestern division at Beloit, Wis., has been appointed assistant superintendent of the Milwaukee division with headquarters at the same point. The Illinois and the Dubuque divisions have been consolidated to form the Dubuque and Illinois division comprising 529 miles of line and **L. F. Donald**, superintendent of the Terre Haute division with headquarters at Terre Haute, Ind., has been appointed superintendent of this newly formed division with headquarters at Savanna, Ill. **J. F. Valentine**, superintendent of the Superior division has been transferred to the Terre Haute division succeeding Mr. Donald. **E. A. Meyer**, superintendent of the former Dubuque division at Dubuque, Iowa, has been transferred to the Superior division to replace Mr. Valentine. **W. M. Thurber**, superintendent of the former Illinois division with headquarters at Savanna has been appointed assistant superintendent of the Dubuque and Illinois division with headquarters at Davenport, Iowa. These changes become effective on November 1.

Engineering, Maintenance of Way and Signaling

E. L. Gosnell who was recently appointed principal assistant engineer of the Baltimore & Ohio, as announced in



Edward L. Gosnell

Railway Age, issue of October 18, page 832 was born on August 17, 1887, at Granite, Md. Mr. Gosnell received his

higher education at St. Johns College, Annapolis, Md., and on September 12, 1906, he entered railway service with the Baltimore & Ohio. He was engaged continuously in construction work until 1914, when he severed his connection with the B. & O. In February, 1916, he re-entered the service of that road and until December, 1918, served as resident engineer, assistant engineer and office engineer at Cincinnati, Ohio. In December, 1918, he was appointed assistant to chief engineer at Baltimore, the position he held at the time of his recent promotion.

Traffic

E. B. Lonergan has been appointed general agent for the Chicago, Springfield & St. Louis at Chicago.

Obituary

Abel I. Culver, former vice-president and general manager of the Delaware & Hudson, died October 24, at his home in Montclair, N. J., after a brief illness.

J. D. White, superintendent of safety of the Illinois Central, with headquarters at Chicago, died at the Illinois Central hospital in that city on October 24.

Andrew K. Van Deventer, former treasurer of the Southern Pacific, died suddenly October 22, at his home in Haverford, Pa., where he had lived since his retirement in 1925.

Edson Rich, who retired as assistant general solicitor of the Union Pacific System in August, 1929, died at his home at Omaha, Nebr., on October 25, after an illness of several weeks.

James B. Finley, who retired as vice-president and general manager of the Southern Pacific of Mexico, with headquarters at Empalme, Son., in 1925, died at his home at Los Angeles, Cal., on October 25.

Edwin H. Flint, assistant auditor of passenger accounts of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, since November, 1909, died in that city on October 19 at the age of 68 years. Mr. Flint had been in the service of the accounting department of the Big Four for nearly 40 years.

Louis D. Blauvelt former chief engineer of the Denver & Salt Lake, died at Denver, Colo., on October 26, at the age of 63 years. Mr. Blauvelt was engaged as an engineer on construction of the Denver, Northwestern & Pacific, (now the Denver and Salt Lake) from 1902 to 1908. For the following two years he was chief engineer and general manager of the San Luis Valley Southern and from 1910 to 1917 he served successively as chief engineer and superintendent and chief engineer of the Denver & Salt Lake. He acted as consult-

ing engineer during the driving of the Moffat Tunnel and since 1921 had been chief engineer of the Colorado Highway department.

Jose S. de Echagaray, superintendent of the Hidalgo division of the National of Mexico, with headquarters at Peralvillo, D. F., was killed in the station yards at Pachuca, Hgo., on September 3, by a man whose relatives had been dismissed from the service of the railways. Mr. Echagaray had been in railway service for more than 49 years. He was born at Guanajuato, Gto., on January 18, 1859, and after completing studies at the Leon (Gto.) Seminary he became a telegraph operator in the Federal telegraph office in that city. For the following nine years he served as telegraph operator and in the Mexican army. He then entered railway service as an operator for the Mexican National Construction Company at Salazar, Mex. From 1881 to 1909 Mr. Echagaray acted for various periods at various points as operator, agent, brakeman, conductor, yardmaster and traveling conductor. In



Jose S. de Echagaray

the latter year he was advanced to chief of traveling conductors, and in this capacity he established a number of schools for the instruction of trainmen. He was promoted to superintendent of the Northern division in May, 1910, was transferred to the Guadalajara division in September of that year and became general manager of the National Railways in April, 1914. When the railways were taken over by the government in December, 1914, he became a representative of the board of directors of the United Railways of Yucatan. In April, 1916, he was appointed general manager of the Acambaro to Queretaro Railroad, then serving successively under a special commission from the general manager of the National Railways, as superintendent of the San Luis division, as chief clerk to the general manager, as superintendent of the Monterrey-Galfo division and under a special commission from the executive president of the corporate company. He had been superintendent of the Hidalgo division since November, 1926.